TURBINE INLET COOLING ASSOCIATION turbineinletcooling.org

**Turbine Inlet Cooling:**
**An Energy Solution That's Good for the Environment, Ratepayers and Plant Owners**

Worldwide campaigns are underway for reducing the emissions of carbon dioxide, the major greenhouse gas. Various organizations, including electric power producers, are making efforts to reduce the carbon footprint of the electricity they generate. Many of the options for reducing the carbon footprint of power production come at a premium price to the plant owners and eventually, the ratepayers. However, turbine inlet cooling (TIC) is a commercially proven option for reducing the carbon footprint of power production during hot weather while saving money for all stakeholders. It achieves this by maximizing the output and improving the energy efficiency of the existing combustion-turbine-based power plants during hot weather. It also reduces the need for siting new power plants and dealing with their environmental impacts. It has been successfully applied to combined-cycle, simple-cycle and cogeneration (combined heat & power) systems.

At rated conditions, combustion turbines are very energy efficient power generation systems. Combined-cycle power plants typically require about 6,500-7,000 Btu per kWh and simple-cycle power plants require 8,000 to 10,000 Btu per kWh. In comparison, steam-turbine power plants require 12,000 to 15,000 Btu per kWh. Unfortunately, the power output and energy efficiency of a combustion turbine decrease at the wrong time: just as high ambient temperatures increase the demand for electric power. To meet power demand during these periods, power producers have to bring online additional power plants, including peaking plants that are less efficient and produce more carbon dioxide and other emissions. If TIC were installed on all combustion-turbine systems, it would reduce emissions and save fuel resources by 20 to over 130% by minimizing the need to operate less efficient and higher operating cost steam-turbine systems.

A number of TIC systems are commercially available from multiple suppliers in the U.S. and thousands of power plants are using these systems around the world. The selection of an optimum TIC technology for each CT system depends on many factors including weather data of the plant location, market value of additional generation capacity and fuel cost.

Therefore, Turbine Inlet Cooling is a viable solution that is:

**Better for the power producer**
Power producers benefit by having efficiently generated more power with reduced carbon footprint during high demand periods. TIC also reduces the capital investment and construction time required for increasing their power generation capacity.

**Better for the ratepayer**
Because TIC helps minimize the need to operate less energy efficient peaking systems, ratepayers eventually pay less than they would have for the electric energy.

**Better for the environment**
TIC helps reduce the carbon footprint for power production by minimizing the need to operate less energy efficient peaking plants. It also reduces the need for siting new power plants and the associated environmental impact.

For more information on TIC, visit the Turbine Inlet Cooling Association (http://www.turbineinletcooling.org) or send an e-mail to exedir@turbineinletcooling.org