TURBINE INLET COOLING ASSOCIATION turbineinletcooling.org

Turbine Inlet Cooling: A Valuable Tool to *Increase* Electric Energy Production

Turbine Inlet Cooling (TIC) augments electric power production from combustion turbine (CT) plants during hot weather when power demand is high. Across the globe, TIC is commercially-proven to create economic and environmental benefits for plant owners and ratepayers. When installed, TIC improves the fuel efficiency of CTs by as much as 15%. This considerably reduces fuel use per MWh and thereby reduces production costs and GHG emissions. Enhanced production up to 35% from existing power plants greatly lessens the use of peaking plants that are often less efficient, more costly to operate and give off more GHG emissions than CT plants. The related costs and environmental impacts of constructing new generation plants are delayed or avoided altogether. Electric power producers, regulators, and policymakers should adopt this valuable technology to maximize generation, save fuel and money, facilitate the use of renewables and lessen adverse environmental effects.

Due to ambient air temperature increases during hot weather, a CT's power output can drop up to 35% below its rated capacity (All CT plants are rated at 59^{o}F). The U. S. Department of Energy estimates that gas turbine plant capacity during hot weather is diminished by more than 31,000 MWs **just when demand is at its peak**. At rated conditions, combined-cycle power plants require about 6,500-7,000 Btu per kWh and simple-cycle power plants require 8,000 to 10,000 Btu per kWh. Steam-turbine power plants require from 8,100 up to a high of 15,000 Btu per kWh. Using TIC substantially reverses their hot weather MW loss by cooling the ambient air at intake which allows these plants to run closer to rated capacity.

TIC can be implemented within 6-18 months and quickly extends existing capacity to add supply to meet demand. TIC helps reduce GHG emissions, and thus shrinks carbon footprints, an important asset as the pressure to curb them accelerates. TIC also facilitates expanded use of renewable energy systems as enhanced backup generation supply becomes available. The optimal TIC option for a CT system depends on many factors such as location, market values of electric energy and its generation capacity, and fuel cost. Multiple TIC technologies are available from many suppliers, and thousands of TIC enhanced power plants around the world are successfully employing Turbine Inlet Cooling.

Turbine Inlet Cooling is a Useful Tool for Ratepayers, the Environment, Plant Owners and Regulators that:

- Maximizes electric power production capacity and efficiency during hot weather
- Minimizes carbon dioxide and other greenhouse gas emissions
- Reduces the use of costly peaking plants during hot weather
- Reduces the need to construct new generation capacity
- Saves money for plant owners and ratepayers
- Provides regulators a valuable tool to quickly enhance existing supply to meet present and future electricity demand

Cooling the Air to Gas Turbines makes Good Sense!

FOR MORE information on Turbine Inlet Cooling visit (http://www.turbineinletcooling.org) or e-mail exedir@turbineinletcooling.org 12/2011