



# TURBINE TIPS

Turbine Tips provided by Pond and Lucier, LLC. ®

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**April, 2004**

**Subject:** Compartment Heaters: why they are needed.  
**Applies to:** All Gas Turbines that operate on Liquid Fuel

Most gas turbines are equipped with compartment heaters. In the Accessory Compartment they are called by their ANSI code 23HA-1 and 23HA-2. Those in the Turbine Compartment are called 23HT-1 and 23HT-2. These heaters have blower motors associated with them. Compartment thermostats (26HA, 26HT) are typically set to maintain a temperature of 50 °F. The thermostats are adjustable should this temperature not be acceptable.

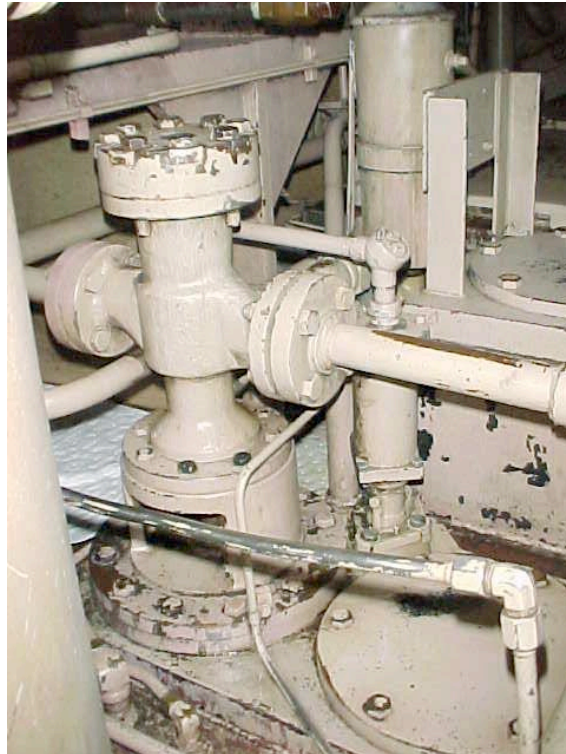
Refer to Figure 1 below that shows a photo of a heater installed near the roof of the turbine compartment. There typically are two heater units in each compartment, one on each side near the door.



**Fig. 1: Typical Turbine Compartment Heater**

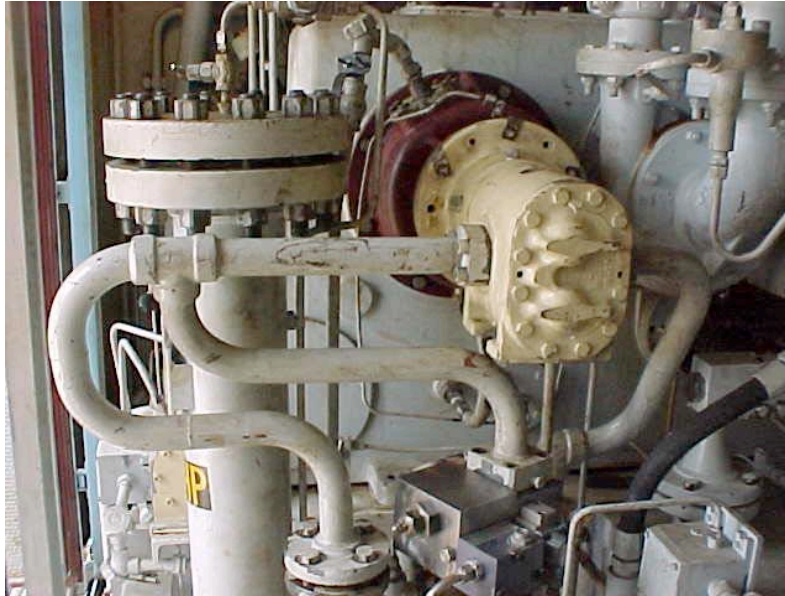
The purpose of the compartment heaters is to keep the environment at acceptable temperature for proper turbine operation. In colder environments, this is particularly important. The fuel oil in

the lines from the stop valve through the fuel pump, HP fuel filter, flow divider up to the check valves must be kept at a temperature conducive to proper ignition. This is particularly vital for “black start” package power plants. It should be observed that the fuel lines coming from the flow divider pass under the inlet plenum where the climate is colder. Thus, all of the lines leading to each fuel nozzle check valve must be kept at the proper temperature to assure proper light-off, cross-firing between combustors, and flame in all the chambers.



**Fig. 2: Fuel Oil Stop Valve**

On-base components such as the bypass valve and flow divider must also be kept warm. Sluggish behavior of these devices is unacceptable, because the fuel/air mixture at the fuel nozzles must be precise for a clean light-off to occur.



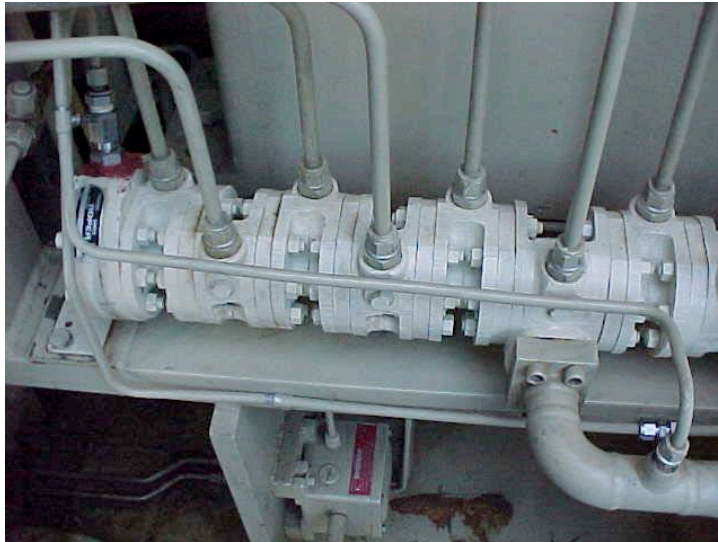
**Fig. 3: Liquid Fuel Pump and Bypass Valve**

The “free-wheeling” flow divider does not have a starting motor. Fuel flowing through the flow divider provides the impetus to turn it. Fuel that is too cold (too viscous) may not break away and start the flow divider as required. See Figure 4 below.



**Fig. 4: HP Filter and Flow Divider with associated piping**

The flow divider apportions the fuel into ten equal quantities. It has gear elements that accomplish this division of the fuel. The gear elements have bearings that are lubricated by the fuel. Magnetic pickups measure the speed of the flow divider. A “failure-to-fire” situation can be checked by monitoring flow divider speed.



**Fig. 5: Flow Divider with supply and 10 discharge lines**

In conclusion, it is imperative in cold climates that the compartment heaters be kept in good operating condition. This is not done for “creature comfort” but to assure that fuel will flow through the system at lightoff. ***Remember, the first firing attempt will be on fuel that is already in the system downstream of the fuel oil stop valve!***

Contact Dave Lucier or Charlie Pond of ***Pond And Lucier, LLC*** if you have any questions regarding problems associated with your liquid fuel system; or if you need technical services on your GE gas turbines. Engineers can be dispatched to your site on short notice.