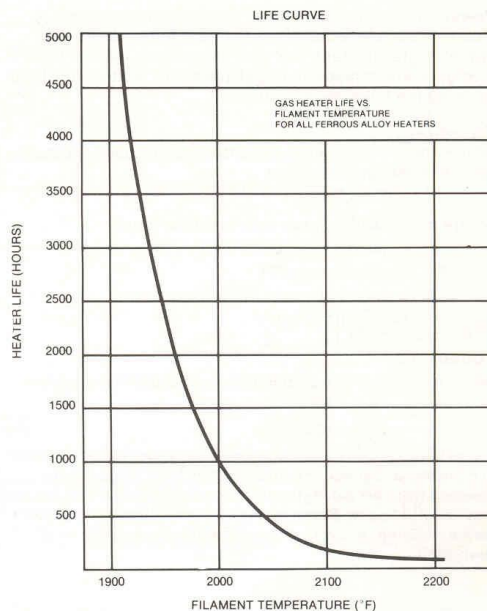


Air Heater Technical Bulletin

Element Life and Heater Failures

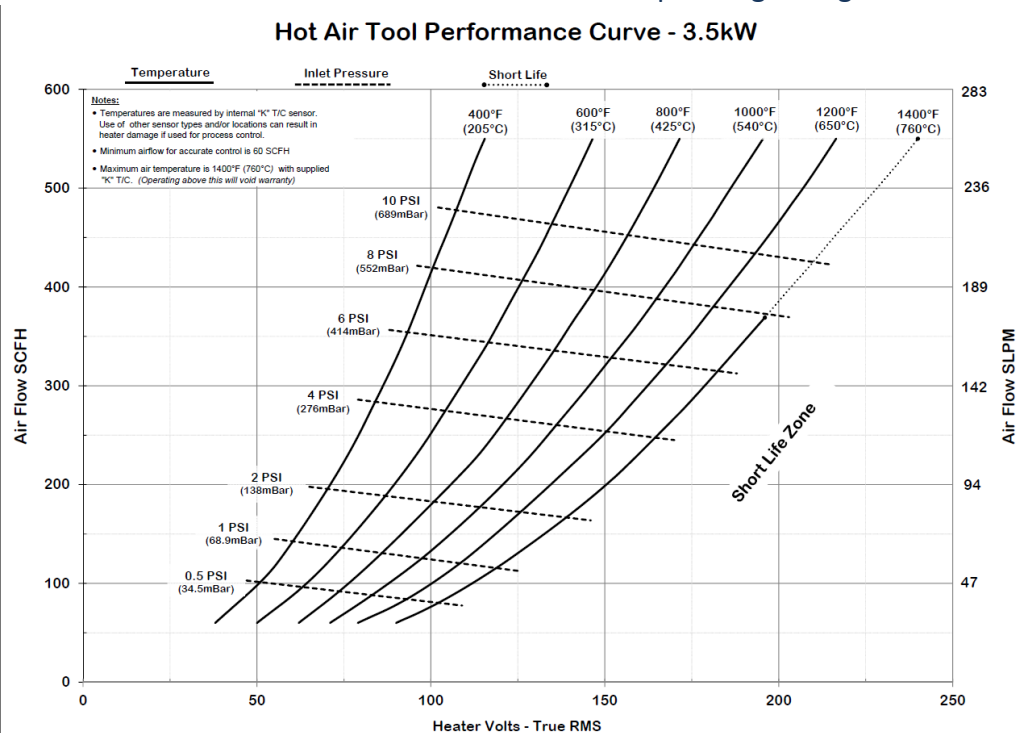
I. ELEMENT LIFE CURVE

The life of a TUTCO SureHeat heater is directly based on the temperature of the filament wire. The curve below shows that 5000 hours of life can be obtained by maintaining a filament temperature below 1900°F. Also note that the element does not fail until it reaches more than 2200°F!



II. HEATER PERFORMANCE CURVE

The Process Air Heater's element temperature is based on the amount of airflow and applied voltage. TUTCO SureHeat's Performance Curves show safe operating voltages and airflows.



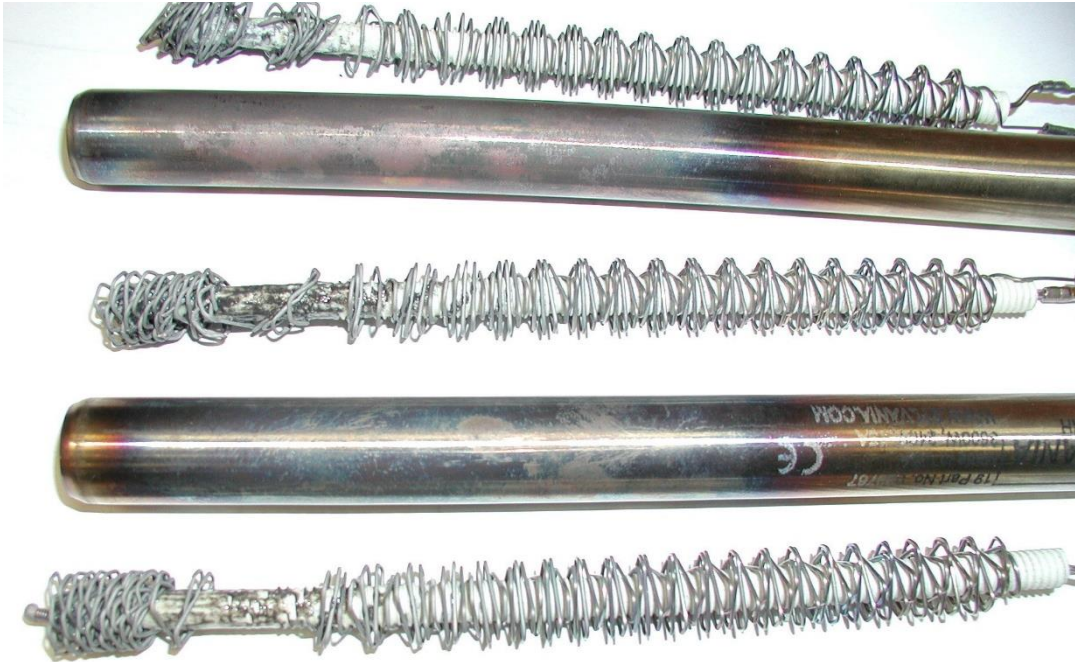
III. MINIMIZING OVERSHOOT

Following these performance curves is critical to long heater life. Because the heater is low-mass, having a fast control system, and minimizing overshoot is CRITICAL to safe operation. Therefore check the following:

- Ensure airflow is ON during start-up.
- Use an exposed junction, "K" type thermocouple, located within 1" of the heater exit.
- Slowing the ramping time (increase the proportional band) on the temperature controller.
- Using a temperature controller with 200 millisecond (0.2 Seconds) or faster cycle time, to ensure fast response to changing conditions. Also be sure the Power Controller (SCR) or Solid State Relay (SSR) is equally fast in regulating the AC voltage to the heater.

IV. FAILURE EXAMPLES

- A) Element failures caused by voltage overshoot while airflow was present. Because airflow is present, the damage occurs only at the exit end.



- B) Failure due to applied voltage with zero airflow. Note damage occurs along entire length.

