

Air Heater Technical Bulletin

PROPER TEMPERATURE CONTROL SET-UP FOR TUTCO SUREHEAT PROCESS AIR HEATERS



- TUTCO SureHeat Process Air Heaters contain high watt-density elements and must be controlled carefully to prevent element failure.
- Sudden applications of power can damage heater and void warranty.
- Following each of these guidelines will help to ensure safe heater operation.



- ☑ **Start the heater with a 0° (F or C) Set-Point (SV):** This will ensure the output signal to the power control starts off low (0% output) before the contactor is engaged and immediately applying full power.
- ☑ **Use proper closed loop control (PID) settings.** TUTCO SureHeat typically uses the following PID; Proportional (P), Integral (I) and Derivative (D); settings as a starting point for stable temperature control. Some manual tuning may be required for more precise control.

<u>Description:</u>	<u>Range:</u>	<u>Default:</u>
(P) roportional	90-250	131
(I) ntegral	8-20	9
(D) erivative	0-2	2
Scan/Cycle Rate	≤ 500mSec	200mSec

- ☑ **Incorporate a Ramp Rate for the start-up of the heater.** The slower you ramp to your final process set-point the less overshoot and potential for non-warranty failures you will have. Typically it is recommended to ramp TUTCO SureHeat heaters over a period of several minutes. The following shows typical recommended ramp rates based on final temperature. (For custom ramp rates consult factory)

<u>Set-Point Temperature</u>	<u>Degrees per Minute</u>
Up to 600°F (up to 300°C)	360°F (150°C)
601-1000°F (301-500°C)	240°F (100°C)
1001-1400°F (501-760°C)	120°F (50°C)
Up to 1650°F (up to 900°C)	60°F (25°C)

OPTIONAL:

- ☑ **Reduce the output of the temperature controller.** Most temperature controllers default to 100% output as its high limit value. This value can be reduced as most air heaters are oversized for the application and don't need 100% power to achieve the customer's desired output.

You can often manually control the heater to determine the approximate fixed output needed from the power controller to achieve the desired heater output and setting this value as the high limit output in the temperature controller. (Contact Technical Support for further details)

Do not hesitate to contact TUTCO SureHeat with any questions.