4.6 Temperature Verification

After the machine pressure and flow have been verified, the next step is to verify heater temperature accuracy.

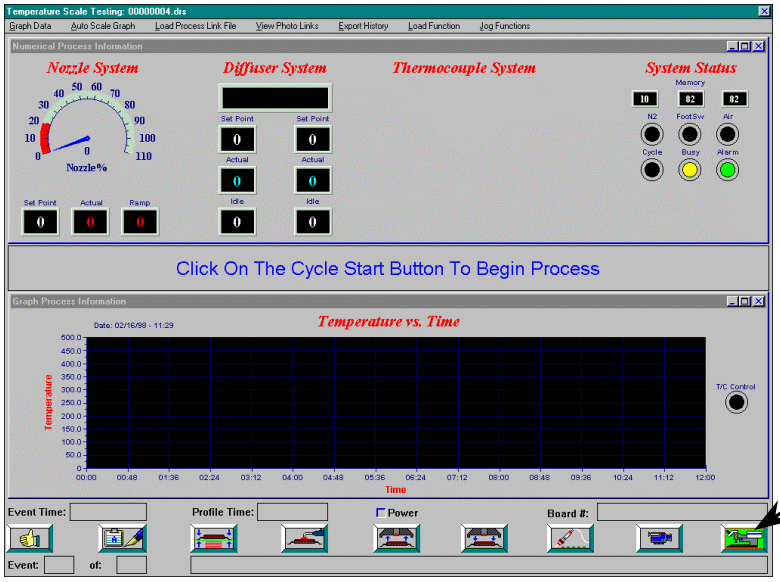
IMPORTANT!!: DISCONNECT THE BLUE FLOW METER HOSE FROM THE FLOW CALIBRATION FITTING AND RECONNECT THE BLUE UPPER HEATER HOSE. FAILURE TO RECONNECT THE UPPER HEATER HOSE PRIOR TO RUNNING THE TOP HEATER WILL CAUSE THE TOP HEATER ELEMENT TO FAIL.

4.6.1 Upper Heater Verification

Note: These 4 steps are to be performed only when the nozzle heater is replaced.

- At the Main Screen, right click on the Air-Vac logo.
- Go to Set-Up, Communications Screen.
- Zero out all of the Temperature Offset Numbers. Exit Screen.
- Perform a Heater Burn-In Test to break in the heater, then proceed to the steps below.

- Perform Temperature Scale Test, select ***Options*** from the menu bar.
- Select Open (File Group: System/System/System).
- Select the ***Temperature Scale Testing*** profile and click on the ***Thumbs Up*** icon.
- Click ***Thumbs Up*** again. The Run screen for the Temperature Scale Testing profile will appear.



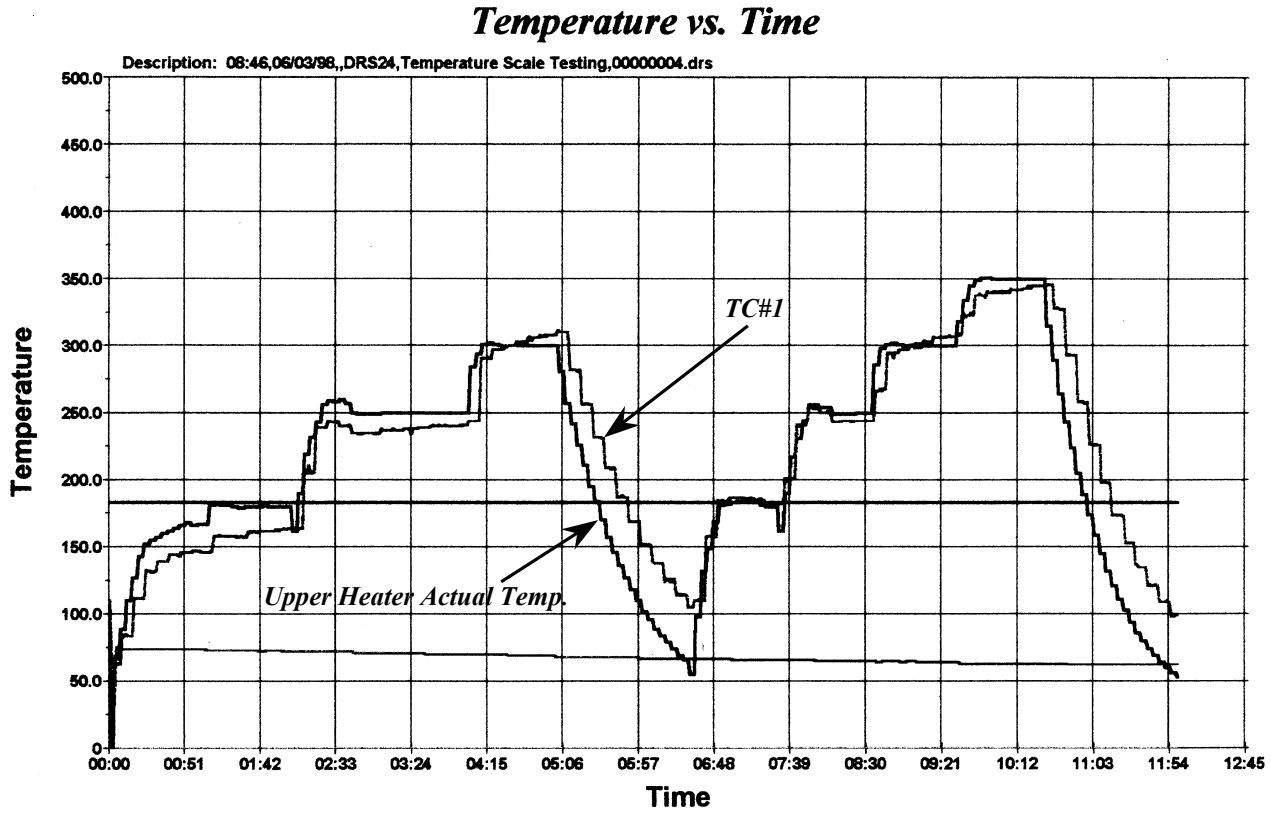
(A) Cycle/Start

- Install the NCAL-1 Temperature Calibration Nozzle into the machine.
- Plug the nozzle thermocouple into channel #1.
- Click on the ***Cycle/Start icon (A)*** to start the profile. The profile will run a scaled sequence of various temperatures and flow rates and will plot the Upper Heater temperature (red line) and the NCAL-1 Nozzle Temperature (green line). After the initial scale up sequence, the profile executes a cool down stage and then scales up the temperature and flow rates a second time. This is necessary to insure that the machine has been properly heated prior to verifying the temperature accuracy.
- Allow profile to run, when complete click on "**Export History**", this saves the graph and data points to the Export directory for analysis.

- Thumbs up out of profile, go to "**Control**" "**Import Graph Data**". Scroll DAT files in upper box to last file, it should be a "**Temp Scale Testing**" DAT file. Double click on this file so graph is displayed.
- Now click on upper task bar "**Graph Data**". Scroll through to end of events 7-10, and look at temperature of T/C #1.
- Subtract actual temperature of T/C#1 from the target temperature and enter this number as the Offset for each range in the "**Setup**" "**Communication**" screen.

  Event 7; 180-T/C#1= _____ Temp Offset 001- 200°C
  Event 8; 250-T/C#1= _____ Temp Offset 201-270°C
  Event 9; 300-T/C#1= _____ Temp Offset 271-340°C
  Event 10; 350-T/C#1= _____ Temp Offset 341-420°C

- Run cold air through the nozzle (use nozzle flow meter screen, **"Setup" "Nozzle Flow Meter"**) for 15 minutes to cool nozzle assembly.
- Go back and run "**Temp Scale Testing**" again, and check offset between set temperature and actual at end of events 7-10. If temperatures are within +/- 6C, you are finished. If not calculate differences and add to offsets to pull temperatures into spec.



4.6.2 Bottom Heater Verification

There is no verification process required for the Bottom Heater.