

12x12 Vacuum Cube Heater Plate Tests

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1 Summary

Some applications in vacuum require heated plates. Ideal Vacuum Products offers heated plates for their Vacuum Cube product lines. This report summarizes testing of one and two heater plates on the 12x12x12 Vacuum Cube.

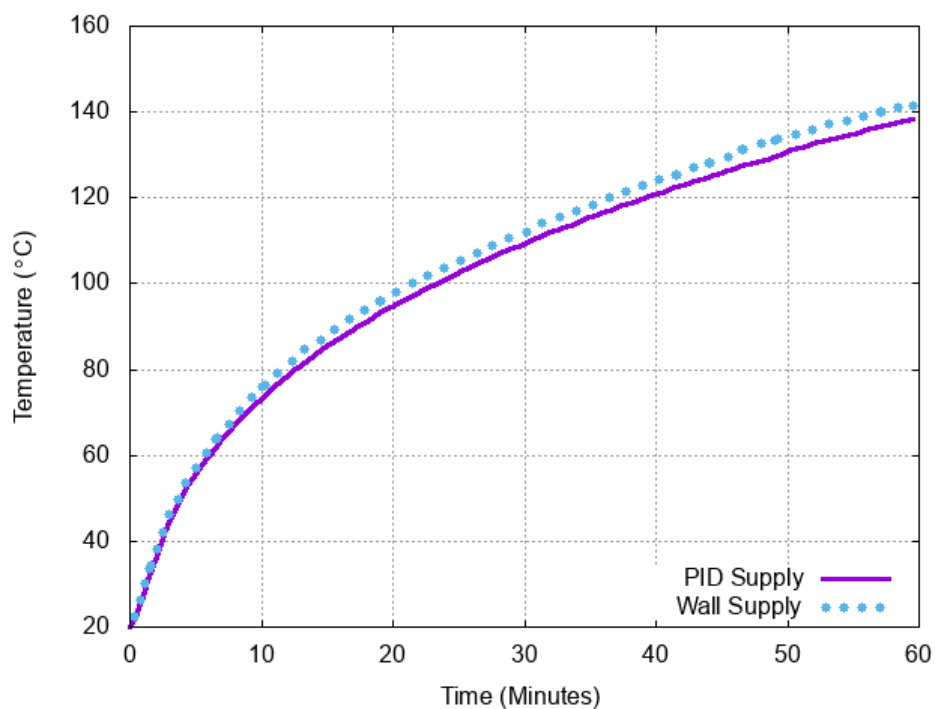


Figure 1: Temperature comparison between different power supplies for the 12x12 power plate.

Fig. 1 shows the difference in temperature between supplying the 12x12 heater plate

with unregulated power from the wall and controlled power from a Single-Zone Temperature Controller (P107361). The set point of the PID is at 300°C and, from the experiments performed, the temperature of the heater plate when connected directly to the 120 VAC_{RMS}, is higher than when connected to the PID. This suggests that the PID is limiting the power to the heater plate. This is a bit suspect because the setpoint is set so high. To check, an oscilloscope should be used to observe the signal from the PID controller.

Now a comparison between using one heater plate and two heater plates is performed. All heater plates are connected directly to the wall for their power supplies. Fig. 2 shows that the Vacuum Cube heater plates heat at the same rate for about 12 minutes and then the effect of the second plate is apparent. Allowing the temperature of the plates to get hotter more quickly and attain a higher final temperature within the hour long experiment.

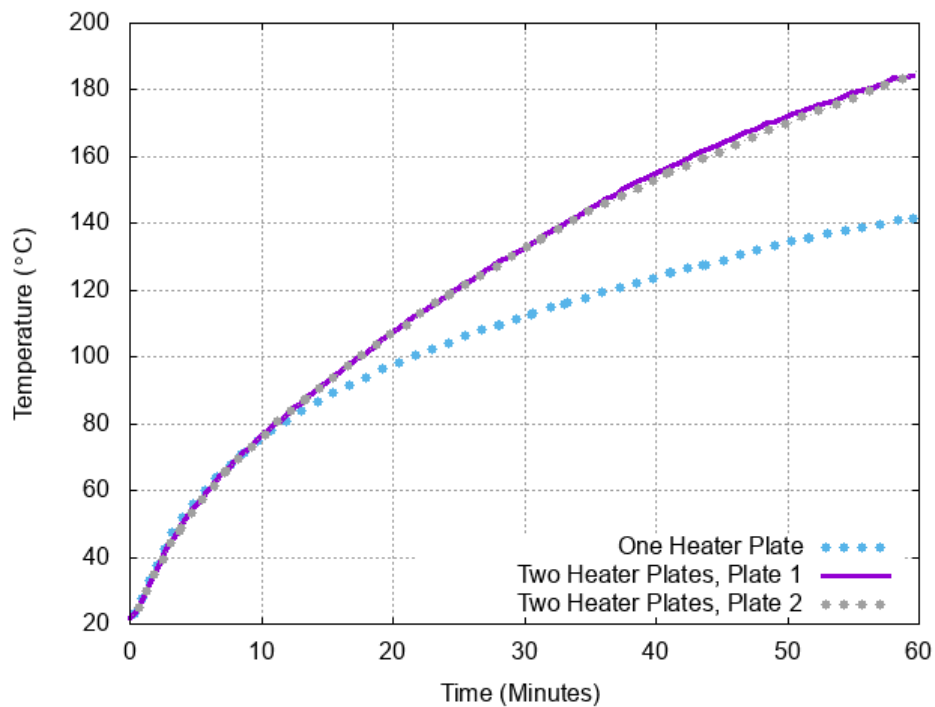


Figure 2: Temperature comparison between a 12x12x12 Vacuum Cube with one heater plate and two heater plates.