WHAT IS CLAIMED IS:

1. A multi-zone heater control system for wafer-processing chambers, the system comprising:

an input for a 3-phase power supply;

a 3-phase rectifier configured to convert a signal from the 3-phase power supply into a DC signal;

a first plurality of power leads configured to a provide a first power to a first plurality of heating zones in a pedestal such that current flows through each of the first plurality of heating elements to dissipate the first power, wherein the first power is derived from the DC signal;

a first return lead that is shared by the first plurality of power leads;

a second plurality of power leads configured to provide a second power to a second plurality of heating zones in the pedestal, wherein the second power is derived from the DC signal;

a second return lead that is shared by the second plurality of power leads; and

a controller configured to cause a polarity of a voltage provided to the first plurality of power leads to switch while still sharing the first return lead such that the current still flows through each of the first plurality of heating elements in a same direction to dissipate the first power.

2. The system of claim 1, further comprising:

one or more DC converters that convert the DC signal into the first power and the second power; and

a transformer that is part of the one or more DC converters that isolates the 3-phase rectifier from the first plurality of power leads and the second plurality of power leads.

3. The system of claim 1, further comprising an interface that receives commands for providing the first power and the second power.

4. The system of claim 1, wherein the controller is further configured to switch transistor pairs to cause the polarity of a voltage provided to the first plurality of power leads to switch.

5. The system of claim 1, further comprising a controller configured to duty cycle the first power provided to each of the first plurality of power leads.

6. A multi-zone heater control system for wafer-processing chambers, the system comprising:

a plurality of power leads configured to supply a voltage to a plurality of different heating zones in a pedestal such that current flows through each of the plurality of different heating elements to generate heat;

a return lead that is shared by the plurality of power leads;

a plurality of switches that are configured to switch a polarity of the voltage provided to the plurality of power leads; and

a controller configured to cause a polarity of a voltage provided to the plurality of power leads and to switch while still sharing the return lead such that the current still flows through each of the plurality of different heating elements in a same direction to generate heat.

7. The system of claim 6, further comprising a plurality of DC chucking leads configured to provide a voltage differential to the pedestal to hold a substrate to the pedestal during a processing operation.

8. The system of claim 7, further comprising a control circuit that provides control signals to the plurality of switches, wherein the control circuit causes the plurality of switches to switch the polarity of the voltage at a frequency that does not interfere with the DC chucking.

9. The system of claim 8, wherein the frequency is between approximately 50 Hz and approximately 100 Hz.

10. The system of claim 6, wherein the plurality of switches comprises a first switch and a second switch, wherein the first switch connects a power lead in the plurality of power leads to a first voltage reference, and the second switch connects the power lead to a second voltage reference.

11. The system of claim 10, wherein the plurality of switches further comprises a third switch and a fourth switch, wherein the third switch connects the return lead to the second voltage reference, and the fourth switch connects the return lead to the first voltage reference.

12. The system of claim 6, wherein the plurality of heating zones comprises inner, middle, and outer heating zones on the pedestal configured to use more than 1 kW of power.

13. The system of claim 6, wherein the plurality of heating zones comprises at least four heating zones positioned around a periphery of the pedestal that are configured to use less than 250 W of power.

14. The system of claim 6, further comprising:

a circuit that measures a resistance of a heating element associated with one of the plurality of heating zones; and

a controller that populates a table that relates temperature in the heating element to resistances measured by the circuit.

15. The system of claim 6, further comprising an RF filter configured to block RF frequencies that are provided to a plasma in the wafer-processing chamber.

16. A method of providing power to a plurality of heaters in multiple zones for wafer-processing equipment, the method comprising:

causing a voltage to be supplied to a plurality of power leads configured to supply the voltage to a plurality of different heating zones in a pedestal such that current flows through each of the plurality of different heating elements to generate heat;

causing current to be received from the plurality of different heating elements through a return lead that is shared by the plurality of power leads; and

causing a polarity of the voltage provided to the plurality of power leads to switch such that the current still flows through each of the plurality of different heating elements in a same direction to generate heat while still sharing the return lead.

17. The method of claim 16, further comprising causing the voltage provided to the plurality of power leads to switch between equal negative and positive voltages.

18. The method of claim 16, further comprising duty cycling each of the plurality of different heating zones in the pedestal such that only one of the plurality of different heating zones are active at a time.

19. The method of claim 18, further comprising duty cycling each of the plurality of different heating zones to provide a time interval during which resistance measurements are made on the plurality of power leads and during which none of the plurality of different heating zones are active.

20. The method of claim 16, further comprising duty cycling each of the plurality of different heating zones in the pedestal such that only two of the plurality of different heating zones are active at a time.