WHAT IS CLAIMED:

1. A system for conditioning the temperature of at least one fluid stream that is passed through a fuel cell stack, the system comprising:

a system module disposed upstream of the fuel cell stack and operable to humidify the fluid stream so that the fluid stream reaches a predetermined humidity level and the predetermined humidity level corresponds to a predetermined temperature;

at least one inlet of the fuel cell stack adapted to receive the fluid stream at a first temperature that is different from the predetermined temperature, the fuel cell stack having at least one outlet that is operable to present coolant having a temperature that is different from the first temperature of the fluid stream in response to receiving the fluid stream; and

a conditioning device operable to receive the fluid stream and the coolant and present the coolant to the fluid stream to change the first temperature of the fluid stream to be equal to the predetermined temperature so that the inlet of the fuel cell stack receives the fluid stream at the predetermined temperature.

2. The system of claim 1 further comprising at least one temperature sensor disposed on the conditioning device and operable to measure the first temperature of the fluid stream and generate a first signal that corresponds to the measured first temperature.

3. The system of claim 2 further comprising a controller operable to generate a control signal that

corresponds to the amount of coolant that is presented to the conditioning device in response to the first signal.

4. The system of claim 3 further comprising a valve coupled between the outlet of the fuel cell stack and the conditioning device and adapted to control the amount of coolant presented to the conditioning device in response to the control signal.

5. The system of claim 4 wherein the controller controls the valve to increase the amount of coolant that is presented to the conditioning device in response to the controller determining that the first temperature is less than the predetermined temperature.

6. The system of claim 4 wherein the fuel cell stack is adapted to transmit the temperature of the coolant to the controller, and the controller controls the valve to decrease the amount of coolant that is presented to the conditioning device in response to the controller determining that the first temperature is greater than the predetermined temperature and that the first temperature is less than the temperature of the coolant.

7. The system of claim 1 wherein the conditioning device further comprises an outer shell having first and second ends and the outer shell defining a cavity therein, and at least one pipe extending through the cavity and between the ends to enclose and deliver the fluid stream from the system module to the fuel cell stack.

8. The system of claim 7 wherein the conditioning device further comprises input and output ports

and the fuel cell stack delivers coolant from the outlet of the fuel cell stack through the input port and to the pipe to change the first temperature of the fluid stream to be equal to the predetermined temperature.

9. The system of claim 7 further comprising at least one humidity sensor coupled to the outer shell.

10. The system of claim 9 wherein the at least one humidity sensor coupled to the at least one pipe and exposed to the fluid stream to measure the amount of water in the fluid stream.

11. The system of claim 7 comprising at least one temperature sensor coupled to the pipe and exposed to the fluid stream to measure the first temperature.

12. A method for conditioning the temperature of at least one fluid stream that is passed through a fuel cell stack, the method comprising:

humidifying the fluid stream to a predetermined humidity level upstream from the fuel cell stack and the predetermined humidity level corresponds to a predetermined temperature having a specified range;

receiving the fluid stream at a first temperature that is different from the predetermined temperature at one or more inlets of the fuel cell stack;

delivering coolant having a temperature that is different from the predetermined temperature from at least one outlet of the fuel cell stack; and

presenting the coolant to the fluid stream to adjust the first temperature so that the first temperature

is equal to the predetermined temperature or within the specified range of the predetermined temperature; and

receiving the fluid stream at the inlet of the fuel cell stack at the predetermined temperature or within the specified range of the predetermined temperature.

13. The method of claim 12 further comprising measuring the first temperature of the fluid stream.

14. The method of claim 13 further comprising increasing the amount of coolant that is presented to the fluid stream in response to determining that the first temperature of the fluid stream is less than the predetermined temperature.

15. The method of claim 15 further comprising decreasing the amount of coolant that is presented to the fluid stream in response to determining that the first temperature of the fluid stream is greater than the predetermined temperature.

16. A conditioning device for conditioning the temperature of at least one fluid stream to reach a predetermined temperature that is passed through a fuel cell stack, the conditioning device comprising:

an outer shell having first and second ends and defining a cavity therein;

at least one pipe extending through the cavity and between the ends to enclose and deliver the fluid stream to the fuel cell stack at a first temperature;

at least one input port disposed at the second end to receive coolant from the fuel cell stack and present the coolant to the pipe to change the first temperature of the

fluid stream to be equal to the predetermined temperature or within a specified range of the predetermined temperature; and

at least one output port disposed at the first end to deliver the coolant away from the conditioning device.

17. The conditioning device of claim 16 further comprising at least one humidity sensor coupled to the outer shell.

18. The conditioning device of claim 17 wherein the humidity sensor is coupled to the pipe and exposed to the fluid stream to measure the amount of water in the fluid stream.

19. The conditioning device of claim 16 further comprising at least one temperature sensor disposed on the outer shell.

20. The conditioning device of claim 19 wherein the temperature sensor is coupled to the tube and exposed to the fluid stream to measure the first temperature.