

CLAIMS

1. A test system for a pressure control equipment (PCE) stack, the test system comprising:
 - a pump configured to direct fluid into the PCE stack;
 - a drive configured to operate a motor of the pump to control a flow of the fluid directed into the PCE stack; and
 - a control system communicatively coupled to the drive and a sensor configured to transmit sensor data indicative of a pressure within the PCE stack, wherein the control system is configured to perform operations comprising:
 - instructing the drive to cause the pump to direct the fluid into the PCE stack until the sensor data indicates that the pressure within the PCE stack has reached a threshold pressure;
 - outputting a control signal to block the fluid from flowing between the pump and the PCE stack in response to receiving the sensor data that indicates that the pressure within the PCE stack has reached the threshold pressure;
 - monitoring the pressure within the PCE stack over an interval of time based on the sensor data; and
 - determining a condition of the PCE stack based on a change in the pressure within the PCE stack during the interval of time.
2. The test system of claim 1, wherein the control system is configured to perform operations comprising determining the PCE stack is not in condition for operation in response to determining a total pressure drop over the interval of time is above a threshold pressure drop, a rate of pressure drop during the interval of time is above a threshold rate of pressure drop, or both.
3. The test system of claim 1, wherein the control system is configured to perform operations comprising outputting a report upon determining the condition

of the PCE stack, and the report comprises the condition of the PCE stack, data indicative of the pressure within the PCE stack over the interval of time, or both.

4. The test system of claim 1, wherein the control system is configured to perform operations comprising:

- receiving an indication to reduce the pressure within the PCE stack; and
- instructing a valve to open and enable the fluid to be directed out of the PCE stack until the sensor data indicates that the pressure within the PCE stack is below an additional threshold pressure.

5. The test system of claim 4, wherein the indication is received via a user input, additional sensor data, or both.

6. The test system of claim 1, wherein the threshold pressure, the interval of time, a flow rate of the fluid directed by the pump into the PCE stack, or any combination thereof, are based on a user input, a predetermined setting, the sensor data, or any combination thereof.

7. The test system of claim 1, comprising an identification sensor communicatively coupled to the control system, wherein the identification sensor is configured to transmit identification data to the control system, the identification data is indicative of characteristics of the PCE stack, and the control system is configured to perform operations comprising setting the threshold pressure, the interval of time, a flow rate of the fluid directed by the pump into the PCE stack, or any combination thereof, based on the identification data.

8. A non-transitory computer readable medium comprising executable instructions that, when executed by processing circuitry, are configured to cause the processing circuitry to perform operations comprising:

- receiving sensor data indicative of a pressure within a pressure control equipment (PCE) stack;

instructing a drive to cause a pump to direct fluid into the PCE stack until the sensor data indicates that the pressure within the PCE stack has reached a threshold pressure;

suspending operation of the drive in response to receiving the sensor data that indicates that the pressure within the PCE stack has reached the threshold pressure;

monitoring the pressure within the PCE stack over an interval of time based on the sensor data; and

determining whether the PCE stack is in condition for operation based on a change in the pressure within the PCE stack during the interval of time.

9. The non-transitory computer readable medium of claim 8, wherein the instructions, when executed by the processing circuitry, are configured to cause the processing circuitry to perform operations comprising determining the PCE stack is in condition for operation in response to determining a total pressure drop over the interval of time is below a threshold pressure drop, a rate of pressure drop during the interval of time is below a threshold rate of pressure drop, or both.

10. The non-transitory computer readable medium of claim 8, wherein the instructions, when executed by the processing circuitry, are configured to cause the processing circuitry to perform operations comprising outputting a notification, a report, or both, based on determining whether the PCE stack is in condition for operation.

11. The non-transitory computer readable medium of claim 8, wherein the instructions, when executed by the processing circuitry, are configured to cause the processing circuitry to perform operations comprising instructing the drive to operate based on a target flow rate of fluid into the PCE stack, a specification of the PCE stack, the sensor data, or any combination thereof.

12. The non-transitory computer readable medium of claim 8, wherein the instructions, when executed by the processing circuitry, are configured to cause the processing circuitry to perform operations comprising:
- determining whether a level switch indicates a low fluid level within a tank from which the pump receives the fluid;
 - determining whether a clog switch indicates a blockage within a hydraulic system through which the pump directs the fluid; and
 - suspending operation of the drive in response to determining the level switch indicates the low fluid level, determining the clog switch indicates the blockage, or both.
13. The non-transitory computer readable medium of claim 12, wherein the instructions, when executed by the processing circuitry, are configured to cause the processing circuitry to perform operations comprising instructing the drive to cause the pump to reduce a flow rate of the fluid directed into the PCE stack in response to receiving sensor data that indicates the pressure within the PCE stack is increasing.
14. A test system for a pressure control equipment (PCE) stack, the test system comprising:
- a pump configured to direct fluid into the PCE stack;
 - a drive configured to operate a motor of the pump to control a flow of the fluid directed into the PCE stack; and
 - a control system communicatively coupled to the drive and a sensor configured to transmit sensor data indicative of a pressure within the PCE stack, wherein the control system is configured to perform operations comprising:
 - receiving an indication to operate a high pressure test;
 - instructing the drive to cause the pump to direct the fluid into the PCE stack until the sensor data indicates that the pressure within the PCE stack has reached a high threshold pressure in response to receiving the indication to operate the high pressure test;

suspending operation of the drive in response to receiving the sensor data that indicates that the pressure within the PCE stack has reached the high threshold pressure;

monitoring the pressure within the PCE stack over an interval of time based on the sensor data; and

comparing the pressure monitored within the PCE stack over the interval of time with a pattern indicative of a condition of the PCE stack to determine whether the PCE stack is in condition for operation.

15. The test system of claim 14, wherein the control system is configured to perform operations comprising determining a flow rate of fluid to be directed into the PCE stack during the high pressure test and instructing the drive to cause the pump to direct the fluid into the PCE stack at the flow rate of fluid.

16. The test system of claim 15, wherein the control system is configured to perform operations comprising dynamically updating the flow rate of fluid during the high pressure test based on the sensor data, additional sensor data, or both, and instructing the drive to adjust the pump to direct the fluid into the PCE stack at the updated flow rate of fluid.

17. The test system of claim 15, wherein the control system is configured to perform operations comprising:

operating an initial test to instruct the drive to cause the pump to direct the fluid into the PCE stack until the pressure within the PCE stack has reached a low threshold pressure that is less than the high threshold pressure; and

monitoring the initial test to determine whether the high pressure test is to be performed, wherein the indication to operate the high pressure test is based on the monitoring of the initial test.

18. The test system of claim 17, wherein the control system is configured to perform operations comprising outputting a notification in response to

determining the high pressures test is not to be performed based on the monitoring of the initial test.

19. The test system of claim 17, wherein the control system is configured to perform operations comprising:

receiving an indication to initiate the initial test;

determining whether the test system, the PCE stack, or both, are in condition to initiate the initial test; and

operating the initial test in response to determining the test system, the PCE stack, or both, are in condition to initiate the initial test.

20. The test system of claim 19, wherein the control system is configured to perform operations comprising determining whether the test system, the PCE stack, or both, are in condition to initiate the initial test by determining whether there is sufficient fluid in a tank from which the pump receives the fluid based on respective sensor data from a level switch, whether there is a blockage within a hydraulic system through which the pump directs the fluid based on respective sensor data from a clog switch, whether sealing elements are in respective configurations to seal a test section in the PCE stack, or any combination thereof.