Leak Testing: Safety Shutoff Valves

It’s that time of the month again: Safety shutoff valve leak testing. A leaking valve invites gas into a combustion chamber when you don’t want it there. And if gas builds up in the combustion chamber, it could lead to an explosion – not good.

If a gas train has a double safety shutoff valve and vent line – and is not properly tested – gas can enter through the vent line, which will increase the cost of operating the unit. To ensure these things don’t happen, shut down the unit and perform a leak test.

Here is a basic overview of what a safety leak test entails. Before you dive in, make sure to gather the proper tools (such as testing hose, bucket of water, and gauge meter) and paperwork to perform and record the test.

1. Close the downstream manual shutoff valve. This will be the valve closest to the burner. Next, close the downstream safety shutoff valve located two valves down.

2. The next valve to close will be the vent line valve. In order to close this valve, you must energize it first. If you are testing a multi-burner unit, make sure the header vent valve is also closed.
3. Move on to the upstream safety shutoff valve. Remove the cap from the upstream leak and test connection valve (test cock). Next, place one end of a rubber hose on the test cock and the other in a bucket filled with water,

and then open the test cock. Don’t put the hose too deeply in the water. If bubbles appear in the bucket, it is a sign that the valve is leaking. If this occurs, shut the test cock down and replace the cap.

4. Open the upstream safety shutoff valve manually or by energizing it. Check that the vent line valve is closed during this time.
5. Remove the cap from the downstream leak test connection and valve. Repeat Step 3 of the process to test for valve leakage.
6. Shut down the upstream safety shutoff valve. De-energize the vent valve so it can open. Finally, open the manual shutoff valve downstream of the safety shutoff valve.

If you followed these six steps, you have successfully completed a shut-off safety valve leak test. If a safety shutoff valve leaked at any time during the test, make sure to clean and repair – or else replace – the valve. Be sure to keep records of each test date, recording the condition for next month’s test.