Claims

1. A system comprising:

a sensing device comprising a pressure sensor configured to measure pressure of water in a water system of a structure during a testing interval when a system shutoff valve of the water system is closed, wherein the sensing device is configured to generate pressure measurement data representing the pressure of the water as measured by the pressure sensor; and

one or more processing units comprising one or more processors and one or more non-transitory storage media storing machine-executable instructions configured when run on the one or more processors to perform:

estimating an estimated orifice size of a leak in the water system based on the pressure measurement data,

wherein:

estimating the estimated orifice size of the leak in the water system further comprises:

estimating the estimated orifice size of the leak when the leak in the water system comprises an escape of a gas from the water system and is devoid of the water leaking from the water system.

2. The system of claim 1, wherein:

the system shutoff valve is an automatic shutoff valve; and

the machine-executable instructions are further configured to perform:

sending a first control signal to close the system shutoff valve.

3. The system of claim 2, wherein the machine-executable instructions are further configured to perform:

detecting use of the water in the water system by a fixture or an appliance connected to the water system during the testing interval; and

sending a second control signal from the one or more processing units to the system shutoff valve to open the system shutoff valve.

4. The system of any one of claims 1, 2, or 3, wherein:

estimating the estimated orifice size of the leak in the water system further comprises:

estimating the estimated orifice size of the leak repeatedly throughout the testing interval.

5. The system of any one of claims 1, 2, 3, or 4, wherein:

the testing interval is approximately 10 minutes to approximately 20 minutes.

6. The system of any one of claims 1, 2, 3, 4, or 5, wherein:

the testing interval recurs at a predetermined periodic interval.

7. The system of any one of claims 1, 2, 3, 4, 5, or 6, wherein the machine-executable instructions are further configured to perform:

determining whether to perform a reverification test based on the estimated orifice size.

8. The system of any one of claims 1, 2, 3, 4, 5, 6, or 7, wherein the machine-executable instructions are further configured to perform:

determining a notification type based on the estimated orifice size; and

sending a message based on the notification type.

9. A method comprising:

measuring pressure of water in a water system of a structure during a testing interval when a system shutoff valve of the water system is closed using a pressure sensor of a sensing device to generate pressure measurement data;

communicating the pressure measurement data to one or more processing units; and

estimating, using the one or more processing units, an estimated orifice size of a leak in the water system based at least in part on the pressure measurement data,

wherein:

estimating the estimated orifice size of the leak in the water system further comprises:

estimating the estimated orifice size of the leak when the leak in the water system comprises an escape of a gas from the water system and is devoid of the water leaking from the water system.

10. The method of claim 9, wherein:

the system shutoff valve is an automatic shutoff valve; and

the method further comprises, before measuring the pressure of the water in the water system of the structure during the testing interval:

sending a first control signal from the one or more processing units to the system shutoff valve to close the system shutoff valve.

11. The method of claim 10 further comprising:

detecting use of the water in the water system by a fixture or an appliance connected to the water system during the testing interval; and

sending a second control signal from the one or more processing units to the system shutoff valve to open the system shutoff valve.

12. The method of any one of claims 9, 10, or 11, wherein:

estimating the estimated orifice size of the leak in the water system further comprises:

estimating the estimated orifice size of the leak repeatedly throughout the testing interval.

13. The method of any one of claims 9, 10, 11, or 12, wherein:

the testing interval is approximately 10 minutes to approximately 20 minutes.

14. The method of any one of claims 9, 10, 11, 12, or 13, wherein:

the testing interval recurs at a predetermined periodic interval.

15. The method of any one of claims 9, 10, 11, 12, 13, or 14 further comprising:

determining whether to perform a reverification test based on the estimated orifice size.

16. The method of any one of claims 9, 10, 11, 12, 13, 14, or 15 further comprising:

determining a notification type based on the estimated orifice size; and

sending a message based on the notification type.