CLAIMS

1. A building water safety device, comprising

- a shut-off valve having an inlet and outlet opening, a valve channel, which connects the inlet opening to the outlet opening, and a shut-off device, which releases the valve channel for the passage of a medium from the inlet to the outlet opening when in an open position, and blocks said valve channel when in a closed position,
- an actuator, in particular an electromagnetically actuated actuator, which is mechanically coupled to the shut-off device, and which is designed to move the shut-off device from the open position into the closed position and vice versa,
- a sensor device for detecting the presence of a person in the area of a water abstraction point,
- a control device that is coupled to the sensor device and the actuator by means of signals, which control device is designed to
    - trigger the actuator to move the shut-off device into the open position when a sensor signal is received from the sensor device, which signals the presence of a person in the area of the water abstraction point, and/or
    - to trigger the actuator to move the shut-off device into the closed position when a sensor signal is received from the sensor device, which signals the absence of a person in the area of the water abstraction point.

characterized in that the switching device comprises a sensor, which is designed to detect the switching status or a switching operation of an electromagnetic peripheral shut-off valve, in particular in that the sensor

- Comprises an electric coil or an electronic magnetic field sensor, which is designed to detect a magnetic field of an electromagnet of the peripheral shut-off valve, or

- Comprises a microphone for detecting a switching noise or flow noise of the peripheral shut-off valve,

and that the start-up actuation is detected by means of an opening process of the peripheral shut-off valve.

2. The building water safety device according to Claim 1,
characterized in that the control device is designed to trigger the actuator to move the shut-off device into the closed position after a predetermined period of time after receiving a sensor signal from the sensor device, which signals the presence of a person in the area of the water abstraction point.

3. The building water safety device according to Claim 1 or 2,
characterized in that the sensor device is designed to detect movement in the area of the water abstraction point and, when such movement is detected, to signal to the control device the presence of a person in the area of the water abstraction point.

4. The building water safety device according to one of the preceding claims,
characterized in that the sensor device is designed to detect a local change in the area of the water abstraction point, and when such a local change in temperature is detected, to signal to the control device the presence of a person in the area of the water abstraction point.

5. The building water safety device according to one of the preceding claims,
characterized in that the sensor device

- operates actively, by transmitting and receiving electromagnetic waves,
- operates actively, by transmitting and receiving ultrasonic waves, or
- operates passively by receiving infrared radiation
- or a combination of two or all of the above mentioned

modes of operation.

6. The building water safety device according to one of the preceding claims, characterized in that the sensor device and/or the actuator unit communicates with the control device by means of a wireless connection.

7. The building water safety device according to one of the preceding claims, characterized in that the sensor device and/or the actuator unit has an energy store, preferably a rechargeable or replaceable energy store.

8. The building water safety device according to one of the preceding claims, characterized in that the shut-off valve is integrated in the central water supply line of a building, and in that a sensor device is provided in each area of one or more water abstraction point(s) of the building.

9. The building water safety device according to one of the preceding claims, characterized in that the control device is part of a building management system and preferably communicates with the sensor devices and/or the actuator within the building by means of a wireless network.

10. The building water safety device according to one of the preceding claims, characterized by a switching device, which is coupled to the control device by means of signals, and is designed to detect a start-up actuation of a water-consuming device, and to transmit a signal to the control device to open the shut-off valve.

11. The building water safety device according to one of the preceding claims, characterized by a flow measurement device or a pressure measurement system for detecting flow or pressure in a central water supply line, and characterized in

that the control device is designed to carry out a test of the water supply network at a predetermined point in time or within a predetermined period of time, when no person is detected in the area of a water abstraction point and when no water-consuming device is activated, as the circumstances may require, with said test comprising the following steps:

- Opening of the shut-off valve by means of the actuator, and the detection of flow by means of the flow measurement device or
- Detection of the pressure characteristic over a predetermined period of time by means of the pressure measurement system when the shut-off valve is closed,
- Display of water leakage in the event that flow or a drop in pressure is detected and,
- as the circumstances may require, Closing the shut-off valve by means of the actuator.

12. A method for preventing water damage in buildings, including the following steps:

- Shutting off a central water supply line by means of an actuator operated shut-off valve,
- Detection of persons in the area of a water abstraction point in the building by means of a sensor device, in particular a motion detector,
- Controlling the actuator of the shut-off valve to open the shut-off valve, when a person is detected in the area of a water abstraction point in the building, characterized by the following steps:

  a) Detection of the switching status or a switching process of an electromagnetic peripheral shut-off valve of the water-consuming device, in particular by means of

  - Direct readout of a control signal of the peripheral shut-off valve
  - Inductive scanning by means of a coil, which is disposed in the area of the peripheral shut-off valve, or by means of a magnetic field sensor, which is disposed in the area of the peripheral shut-off valve, or

- Acoustic scanning of a switching noise of the peripheral shut-off valve,

and

b) Control of the actuator of the shut-off valve as a function of the switching status or switching process of the peripheral shut-off valve.

13. The method according to Claim 12, including the following steps

- Detecting start-up actuation on a water-consuming device,
- Controlling the actuator of the shut-off valve to open the shut-off valve when a start-up actuation is detected.

14. The method according to Claim 12 or 13, including the following steps

- Wireless transmission of a signal from the sensor device and/or the water-consuming device to a control device, and/or
- Wireless transmission of a signal from the control device to the actuator of the shut-off valve.

15. The method according to one of the claims 12 to 14, including the following steps

- at a predetermined testing time at regular time intervals, or when a testing button is actuated:
    - Opening of the shut-off valve by means of the actuator, and
    - Detection of the flow by means of a flow measurement device,

or

- Detection of a pressure characteristic over a predetermined period of time with a closed shut-off valve by means of a pressure measurement system downstream from the shut-off valve in the direction of flow,

and

- Closing the shut-off valve by means of the actuator and displaying water leakage in the event that a flow or a drop in pressure is detected.

CLAIMS

1. A building water safety device, comprising

- a shut-off valve having an inlet and outlet opening, a valve channel, which connects the inlet opening to the outlet opening, and a shut-off device, which releases the valve channel for the passage of a medium from the inlet to the outlet opening when in an open position, and blocks said valve channel when in a closed position,
- an actuator, in particular an electromagnetically actuated actuator, which is mechanically coupled to the shut-off device, and which is designed to move the shut-off device from the open position into the closed position and vice versa,
- a sensor device for detecting the presence of a person in the area of a water abstraction point,
- a control device that is coupled to the sensor device and the actuator by means of signals, which control device is designed to
  - o trigger the actuator to move the shut-off device into the open position when a sensor signal is received from the sensor device, which signals the presence of a person in the area of the water abstraction point, and/or
  - o to trigger the actuator to move the shut-off device into the closed position when a sensor signal is received from the sensor device, which signals the absence of a person in the area of the water abstraction point.

characterized in that the control device comprises a sensor, which is designed to detect the switching status or a switching operation of an electromagnetic peripheral shut-off valve,

and that the start-up actuation is detected by means of an opening process of the peripheral shut-off valve.

2. The building water safety device according to Claim 1,

characterized in that the switching status or the switching operation is detected by the sensor

- Comprising an electric coil or an electronic magnetic field sensor, which is designed to detect a magnetic field of an electromagnet of the peripheral shut-off valve, or
- Comprising a microphone for detecting a switching noise or flow noise of the peripheral shut-off valve,

3. The building water safety device according to Claim 1 or 2,

characterized in that the control device is designed to trigger the actuator to move the shut-off device into the closed position after a predetermined period of time after receiving a sensor signal from the sensor device, which signals the presence of a person in the area of the water abstraction point.

4. The building water safety device according to one of the preceding claims,

characterized in that the sensor device is designed to detect movement in the area of the water abstraction point and, when such movement is detected, to signal to the control device the presence of a person in the area of the water abstraction point.

5. The building water safety device according to one of the preceding claims,

characterized in that the sensor device is designed to detect a local change in the area of the water abstraction point, and when such a local change in temperature is detected, to signal to the control device the presence of a person in the area of the water abstraction point.

6. The building water safety device according to one of the preceding claims, characterized in that the sensor device

- operates actively, by transmitting and receiving electromagnetic waves,
- operates actively, by transmitting and receiving ultrasonic waves, or
- operates passively by receiving infrared radiation
- or a combination of two or all of the above mentioned modes of operation.

7. The building water safety device according to one of the preceding claims, characterized in that the sensor device and/or the actuator unit communicates with the control device by means of a wireless connection.

8. The building water safety device according to one of the preceding claims, characterized in that the sensor device and/or the actuator unit has an energy store, preferably a rechargeable or replaceable energy store.

9. The building water safety device according to one of the preceding claims, characterized in that the shut-off valve is integrated in the central water supply line of a building, and in that a sensor device is provided in each area of one or more water abstraction point(s) of the building.

10. The building water safety device according to one of the preceding claims,

characterized in that the control device is part of a building management system and preferably communicates with the sensor devices and/or the actuator within the building by means of a wireless network.

11. The building water safety device according to one of the preceding claims, characterized by a switching device, which is coupled to the control device by means of signals, and is designed to detect a start-up actuation of a water-consuming device, and to transmit a signal to the control device to open the shut-off valve.

12. The building water safety device according to one of the preceding claims, characterized by a flow measurement device or a pressure measurement system for detecting flow or pressure in a central water supply line, and characterized in that the control device is designed to carry out a test of the water supply network at a predetermined point in time or within a predetermined period of time, when no person is detected in the area of a water abstraction point and when no water-consuming device is activated, as the circumstances may require, with said test comprising the following steps:

- Opening of the shut-off valve by means of the actuator, and the detection of flow by means of the flow measurement device or
- Detection of the pressure characteristic over a predetermined period of time by means of the pressure measurement system when the shut-off valve is closed,
- Display of water leakage in the event that flow or a drop in pressure is detected and,
- as the circumstances may require, closing the shut-off valve by means of the actuator.

13. A method for preventing water damage in buildings, including the following steps:

- Shutting off a central water supply line by means of an actuator operated shut-off valve,
- Detection of persons in the area of a water abstraction point in the building by means of a sensor device, in particular a motion detector,
- Controlling the actuator of the shut-off valve to open the shut-off valve, when a person is detected in the area of a water abstraction point in the building, characterized by the following steps:

a) Detection of the switching status or a switching process of an electromagnetic peripheral shut-off valve of the water-consuming device

and

b) Control of the actuator of the shut-off valve as a function of the switching status or switching process of the peripheral shut-off valve.

14. The method according to Claim 13

characterized in that the switching status or the switching operation is detected via a

- Direct readout of a control signal of the peripheral shut-off valve
- Inductive scanning by means of a coil, which is disposed in the area of the peripheral shut-off valve, or by means of a magnetic field sensor, which is disposed in the area of the peripheral shut-off valve, or
- Acoustic scanning of a switching noise of the peripheral shut-off valve,

15. The method according to Claim 13 or 14, including the following steps

- Detecting start-up actuation on a water-consuming device,
- Controlling the actuator of the shut-off valve to open the shut-off valve when a start-up actuation is detected.

16. The method according to Claim 13, 14 or 15, including the following steps

- Wireless transmission of a signal from the sensor device and/or the water-consuming device to a control device, and/or
- Wireless transmission of a signal from the control device to the actuator of the shut-off valve.

17. The method according to one of the claims 13 to 16, including the following steps

- at a predetermined testing time at regular time intervals, or when a testing button is actuated:
  - Opening of the shut-off valve by means of the actuator, and
  - Detection of the flow by means of a flow measurement device,

or

  - Detection of a pressure characteristic over a predetermined period of time with a closed shut-off valve by means of a pressure measurement system downstream from the shut-off valve in the direction of flow,

and

- Closing the shut-off valve by means of the actuator and displaying water leakage in the event that a flow or a drop in pressure is detected.