

WATER PURIFYING SYSTEM AND FILTER ELEMENT MANAGEMENT AND CONTROL METHOD BASED ON WATER PURIFYING SYSTEM

TECHNICAL FIELD

[0001] The present disclosure relates to the field of communications, and more particularly, to a water purifying system and a method for managing and controlling a filter element based on the water purifying system.

BACKGROUND

[0002] Water quality may get worse when a water purifier is used for a period of time, and a user needs to replace a filter element. If the filter element is not replaced in time, the water purifier will not achieve the effect of water purification. In case of using a wrong filter element or a filter element with poor quality, the water purifier may not achieve the effect of water purification either.

[0003] In order to prompt the user to prevent the situation of not replacing the filter in time, a display window or an indicator light for prompting the service life of the filter element is arranged on the water purifier in the related art; when the working time of the filter element is consistent with the time assumed by a manufacturer, the user can replace the filter element in advance. However, it is regulated only in the descriptions of some products for ensuring that a correct filter element is used, but there are no practical and effective measures to ensure the correctness of the filter element.

[0004] As the water quality in various places are inconsistent, and even the water quality in the same place may also be inconsistent, the actual service life of the filter element is different from the theoretical life thereof, which may actually cause a situation that the filter element is still shown in a good condition even if it has been damaged actually. In other words, the data actually used by the user and the data presumptively used by the manufacturer are non-synchronous, which leads to a situation of replacing the filter element early or lately. Or, because there is lacking effective interconnection means between the user and the manufacturer, even if the user uses a poor or wrong filter element, the manufacturer cannot know this, which results in that the water purification effect of the water purifier

cannot achieve the design requirements of the manufacturer. Moreover, since the filter element used cannot be identified, a filter element life indicator on the water purifier cannot know when to replace the filter element, and the replacement cycle of the filter element can only be judged by the user based on experiences, which greatly affects the water purifying quality and service life of the water purifier.

SUMMARY

[0005] In order to overcome the problems in the related art, the present disclosure provides a water purifying system and a method for managing and controlling a filter element based on a water purifying system.

[0006] According to a first aspect of embodiments of the present disclosure, there is provided a water purifying system. The water purifying system includes a water purifying device, the water purifying device includes a filter element for filtering water, and the water purifying system further includes:

[0007] a filter element identification device which is provided on the filter element and is used for identifying the filter element;

[0008] a filter element recognition device for reading identification information of the filter element identification device; and

[0009] a remote control interface for sending the identification information read by the filter element recognition device to a manufacturer data management centre.

[0010] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0011] The foregoing water purifying system may also include the following characteristics that the water purifying system further includes:

[0012] a water property detection device for detecting properties of water filtered by the filter element; and

[0013] a control device which is connected with the water property detection device and the remote control interface and is used for storing and processing output information of the water property detection device.

[0014] The technical solution provided by the embodiments of the present disclosure

not only can ensure that a user uses a correct filter element, but also can detect the water quality information of the water purified by the water purifying device, determine whether the filter element needs to be replaced according to the water quality information, and promote the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0015] The foregoing water purifying system may also include the following characteristics that the water purifying system further includes:

[0016] a display device which is connected with the control device and is used for displaying a usage state of the filter element.

[0017] The technical solution provided by the embodiments of the present disclosure can ensure that a user uses a correct filter element, but also can detect the water quality information of the water purified by the water purifying device, determine whether the filter element needs to be replaced according to the water quality information, and can intuitively display usage state information of the filter element to the user, to promote the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0018] The foregoing water purifying system may also include the following characteristics that the water purifying system further includes:

[0019] a transit device connected with the water purifying device.

[0020] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0021] The foregoing water purifying system may also include the following characteristics that the filter element recognition device is provided in the water purifying device or the transit device.

[0022] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0023] The foregoing water purifying system may also include the following characteristics that the remote control interface is provided in the water purifying device or the transit device (transitional device).

[0024] The technical solution provided by the embodiments of the present disclosure

can ensure the water purifying quality and service life of the water purifying device.

[0025] The foregoing water purifying system may also include the following characteristics that the control device is provided in the water purifying device or the transit device.

[0026] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0027] The foregoing water purifying system may also include the following characteristics that the display device is provided in the water purifying device or the transit device.

[0028] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0029] The foregoing water purifying system may also include the following characteristics that the transit device is provided inside the water purifying device.

[0030] The technical solution provided by the embodiments of the present disclosure can ensure the water purifying quality and service life of the water purifying device.

[0031] According to a second aspect of embodiments of the present disclosure, there is provided a method for managing and controlling a filter element of a water purifying system, including:

[0032] acquiring identification information of a filter element in a water purifying device;

[0033] transmitting the identification information to a manufacturer data management centre of the water purifying device;

[0034] receiving a verification result of the identification information returned by the manufacturer data management centre; and

[0035] processing the filter element according to the verification result.

[0036] The technical solution provided by the embodiments of the present disclosure can ensure that a user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0037] The foregoing filter element management and control method may also

include the following characteristics that the processing the filter element according to the verification result includes:

[0038] acquiring and transmitting water quality information of water filtered by the filter element to the manufacturer data management centre when the verification result prompts that the filter element is correct;

[0039] receiving remaining life information of the filter element returned by the manufacturer data management centre, the remaining life information of the filter element being determined by the manufacturer data management centre according to the water quality information and technical parameters inclusive in the identification information.

[0040] The technical solution provided by the embodiments of the present disclosure can ensure that a user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0041] The foregoing filter element management and control method may also include the following characteristics that the processing the filter element according to the verification result further includes:

[0042] displaying the remaining life information of the filter element.

[0043] The foregoing filter element management and control method may also include the following characteristics that the processing the filter element according to the verification result includes:

[0044] acquiring and transmitting water quality information of water filtered by the filter element to the manufacturer data management centre when the verification result prompts that the filter element is correct;

[0045] receiving a judgment result returned by the manufacturer data management centre regarding whether the filter element needs to be replaced, the judgment result being judged by the manufacturer data management centre according to the water quality information; and

[0046] prompting a user to replace the filter element when the judgment result is that the filter element needs to be replaced.

[0047] The technical solution provided by the embodiments of the present disclosure

can ensure that a user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0048] The foregoing filter element management and control method may also include the following characteristics that the processing the filter element according to the verification result includes:

[0049] prompting a user to replace the filter element when the verification result prompts that the filter element is wrong.

[0050] The technical solution provided by the embodiments of the present disclosure can ensure that a user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0051] The foregoing filter element management and control method may also include the following characteristics that the processing the filter element according to the verification result includes:

[0052] prompting a user to adjust a position of the filter element or install a filter element when the verification result prompts that no filter element is installed.

[0053] The technical solution provided by the embodiments of the present disclosure can ensure that a user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0054] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0055] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments consistent with the invention and, together with the description, serve to explain the principles of the invention.

[0056] Fig. 1 is a first block diagram illustrating a water purifying system, according

to an exemplary embodiment.

[0057] Fig. 2 is a second block diagram illustrating a water purifying system, according to an exemplary embodiment.

[0058] Fig. 3 is a third block diagram illustrating a water purifying system, according to an exemplary embodiment.

[0059] Fig. 4 is a fourth block diagram illustrating a water purifying system, according to an exemplary embodiment.

[0060] Fig. 5 is a fifth block diagram illustrating a water purifying system, according to an exemplary embodiment.

[0061] Fig. 6 is a flow chart of a method for managing and controlling a filter element based on a water purifying system, according to an exemplary embodiment.

DETAILED DESCRIPTION

[0062] Reference will now be made in detail to exemplary embodiments, examples of which are illustrated in the accompanying drawings. The following description refers to the accompanying drawings in which the same numbers in different drawings represent the same or similar elements unless otherwise represented. The implementations set forth in the following description of exemplary embodiments do not represent all implementations consistent with the invention. Instead, they are merely examples of devices and methods consistent with some aspects related to the invention as recited in the appended claims.

[0063] Fig. 1 is a first block diagram illustrating a water purifying system, according to an exemplary embodiment. Referring to Fig. 1, the water purifying system includes a filter element 10, a filter element identification device 110, a filter element recognition device 20 and a remote control interface 30. The filter element 10 is provided in the water purifying device of the water purifying system. In other words, the water purifying system includes the water purifying device, and the water purifying device includes the filter element 10. The filter element 10 is used for filtering water. The filter element identification device 110 is provided on the filter element 10 and is used for identifying the filter element 10. The filter element recognition device 20 is used for reading identification information of the filter element identification device 110. The remote control interface 30 is used for sending the

identification information read by the filter element recognition device 20 to the manufacturer data management centre. The filter element recognition device 20 and the filter element identification device 110 are connected by a wireless manner. The filter element recognition device 20 and the remote control interface 30 may either be connected by a wireless manner or by a wired manner.

[0064] The filter element identification device 110 may be a bar code or an erasable chip. The bar code may be stuck on a surface of a housing of the filter element, or may be an identification code injected on the housing of the filter element. Various information, for example, a model number, a manufacturer and technical parameters of the filter element, may be recorded in the erasable chip. The erasable chip may be installed on the housing of the filter element or stuck on an inner surface of the filter element. The identification information in the filter element identification device 110 may include the information like the model number, the manufacturer and the technical parameters of the filter element.

[0065] The filter element recognition device 20 may be a scanner. The filter element recognition device 20 not only can recognize the identification of the filter element, but also can be used for determining whether the filter element is kept on a given position, so as to ensure that the filter element can work normally. If the filter element is not installed properly or the filter element is pulled out, the filter element recognition device 20 can prompt the user to install the filter element properly.

[0066] The remote control interface 30 and the manufacturer data management centre are connected by a wireless manner. The wireless connection manner may be a WiFi connection, a GPRS (General Packet Radio Service, general packet radio service) connection, an infrared connection, or the like. Data connection between the remote control interface 30 and the manufacturer data management centre may either be a real-time connection, or a weekly connection, or a monthly connection, wherein a connection period is set according to a using habit of the user.

[0067] When in use, the filter element recognition device 20 reads the identification information in the filter element identification device 110, and sends the identification information to the manufacturer data management centre. The manufacturer data management centre verifies whether the filter element used by the user is correct according to

the identification information; and if the filter element used by the user is wrong (for example, the model number of the filter element is not matched with the model number of the water purifying device), the manufacturer may notify the user to replace the filter element by means of telephone or mobile phone. In this way, the user can be ensured to use a correct filter element, so that the water purifying quality and service life of the water purifying device are ensured.

[0068] The water purifying system illustrated in the embodiment can ensure that the user uses a correct filter element, and ensure the water purifying quality and service life of the water purifying device.

[0069] Fig. 2 is a second block diagram illustrating a water purifying system, according to an exemplary embodiment. Referring to Fig. 2, the water purifying system includes a filter element 10, a filter element identification device 110, a filter element recognition device 20, a remote control interface 30, a water property detection device 40 and a control device 50. The effects of the filter element 10, the filter element identification device 110, the filter element recognition device 20 and the remote control interface 30 have already been explained above, and will not be elaborated herein. The water property detection device 40 is used for detecting properties of water filtered by the filter element 10. The control device 50 is connected with the water property detection device 40 and the remote control interface 30. The control device 50 is used for storing and processing output information of the water property detection device 40. The water property detection device 40 and the control device 50 are connected electrically.

[0070] The remote control interface 30 and the control device 50 may either be merged into one module, or serve as two relatively independent modules. The water property detection device 40 and the control device 50 may either be merged into one module, or serve as two relatively independent modules.

[0071] The water property detection device 40 can be provided on a waterway connected with the filter element 10. The water property detection device 40 may be a TDS (Total Dissolved Solids) detection device, a water temperature sensor, a flowmeter, or a hydraulic gauge, etc. The water property detection device 40 is used for collecting such water property information of the water filtered by the filter element 10 such as water quality

information, water temperature information, water quantity information, water pressure information, or flow rate information, etc. The manufacturer data management centre may utilize the water property detection device 40 to set a period to regularly collect the water quality information of the water purified by the water purifying device. If the user does not replace the filter element when the water quality exceeds a water quality safety standard for a certain period, the manufacturer may notify the user to replace the filter element by means of telephone or mobile phone. The manufacturer data management centre may also determine remaining life information of the filter element according to the water quality information and the technical parameters in the identification information of the filter element. The user may replace the filter element in time according to the remaining life information of the filter element, so as to ensure the water purifying quality.

[0072] The water purifying system illustrated by the embodiment not only can ensure that the user uses a correct filter element, but also can detect the water quality information of the water purified by the water purifying device, determines whether the filter element needs to be replaced according to the water quality information, and promotes the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0073] Fig. 3 is a third block diagram illustrating a water purifying system, according to an exemplary embodiment. Referring to Fig. 3, the water purifying system includes a filter element 10, a filter element identification device 110, a filter element recognition device 20, a remote control interface 30, a water property detection device 40, a control device 50 and a display device 60. The effects of the filter element 10, the filter element identification device 110, the filter element recognition device 20, the remote control interface 30, the water property detection device 40 and the control device 50 have already been explained above, and will not be elaborated herein. The display device 60 is connected with the control device 50. The display device 60 is used for displaying a usage state of the filter element 10.

[0074] The display device 60 may remind the user of the usage state of the filter element 10, for instance, a wrong filter element, an uninstalled filter element (the reason is possible that the filter element is not installed properly or the filter element is pulled out), and remaining service life of the filter element, or the like.

[0075] The water purifying system illustrated by the embodiment can ensure that the user uses a correct filter element, but also can detect the water quality information of the water purified by the water purifying device, determine whether the filter element needs to be replaced according to the water quality information, and can intuitively display usage state information of the filter element to the user, to promote the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0076] Fig. 4 is a fourth block diagram illustrating a water purifying system, according to an exemplary embodiment. Referring to Fig. 4, the water purifying system includes a water purifying device 70, a filter element 10, a filter element identification device 110, a filter element recognition device 20, a remote control interface 30, a water property detection device 40, a control device 50 and a display device 60. The filter element 10, the filter element identification device 110, the filter element recognition device 20, the remote control interface 30, the water property detection device 40, the control device 50 and the display device 60 are all provided in the water purifying device 70. The filter element identification device 110 is provided on the filter element 10 in the water purifying device 70, while the filter element recognition device 20, the remote control interface 30, the water property detection device 40, the control device 50 and the display device 60 are provided in the water purifying device 70.

[0077] The water purifying system illustrated by the embodiment can ensure that the user uses a correct filter element, but also can detect the water quality information of the water purified by the water purifying device, determine whether the filter element needs to be replaced according to the water quality information, and can intuitively display usage state information of the filter element to the user, to promote the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[0078] Fig. 5 is a fifth block diagram illustrating a water purifying system, according to an exemplary embodiment. Referring to Fig. 5, the water purifying system includes a water purifying device 70, a transit device 80, a filter element 10, a filter element identification device 110, a filter element recognition device 20, a remote control interface 30, a water

property detection device 40, a control device 50 and a display device 60. The filter element identification device 110 is provided on the filter element 10 in the water purifying device 70, the water property detection device 40 is provided in the water purifying device 70, while the filter element recognition device 20, the remote control interface 30, the control device 50 and the display device 60 are provided in the transit device 80.

[0079] The transit device 80 may be a movable device. The transit device 80 may either be placed independently, or be placed on the water purifying device 70. The transit device 80 may either be hidden inside the water purifying device, or be independently provided at any position of the user's house.

[0080] The water purifying device 70 and the transit device 80 may either be connected by a wired manner, or be connected by a wireless manner, for instance, a WiFi connection, a GPRS connection, an infrared connection, or the like. The use of the transit device enables the user to know the condition of the water purifying device in a place relatively far from the water purifying device. For instance, if the water purifying device is placed in a kitchen while the transit device is provided at a certain position in a living room, then the user can clearly know the condition of the water purifying device at current in the living room without going to the kitchen for viewing the water purifying device, which is more convenient and humanized. Meanwhile, in this way, pollution to the transit device caused by kitchen fumes can be reduced, so that the reliability and signal stability of the transit device can be improved, and the service life of the transit device can be prolonged.

[0081] In the embodiments of the present disclosure, any one of the filter element recognition device 20, the remote control interface 30, the control device 50 and the display device 60 can either be provided in the transit device 80, or be provided in the water purifying device 70.

[0082] The water purifying system illustrated by the embodiment facilitates the user to know the usage state information of the filter element at a place relatively far from the water purifying device, which not only promotes the user to replace the filter element in time and ensures the water purifying quality and service life of the water purifying device, but also provides usability for the user.

[0083] The following example demonstrates how to manage and control the filter

element based on the water purifying system of the present disclosure.

[0084] The filter element recognition device 20 reads the identification information in the filter element identification device 110, and transmits the identification information to the remote control interface 30.

[0085] The remote control interface 30 transmits the identification information to the manufacturer data management centre; and if the manufacturer data management centre verifies that the filter element is not a filter element matched with the model number of the water purifying device, then the manufacturer data management centre will return a verification result of “wrong filter element” to the remote control interface 30.

[0086] After receiving the verification result of “wrong filter element”, the remote control interface 30 transmits the verification result to the display device 60 through the control device 50, and the display device 60 displays the verification result of “wrong filter element” to the user.

[0087] After seeing the verification result of “wrong filter element”, the user replaces the filter element by a correct filter element.

[0088] The filter element recognition device 20 reads identification information in the filter element identification device 110 on the replaced filter element, and then transmits the identification information to the remote control interface 30.

[0089] The remote control interface 30 transmits the identification information to the manufacturer data management centre, and the manufacturer data management centre verifies that the filter element is correct, then the manufacturer data management centre will return a verification result of “correct filter element” to the remote control interface 30.

[0090] After receiving the verification result of “correct filter element”, the remote control interface 30 transmits the verification result to the display device 60 through the control device 50, then the display device 60 displays the verification result of “correct filter element”, and meanwhile, the control device 50 notifies the water property detection device 40 to detect the water quality information.

[0091] The water property detection device 40 transmits the detected water quality information to the remote control interface 30 through the control device 50, then the remote control interface 30 transmits the water quality information to the manufacturer data

management centre, and the manufacturer data management centre determines the remaining life of the replaced filter element according to the water quality information and the technical parameters in the identification information of the replaced filter element, and returns the remaining life information to the remote control interface 30.

[0092] The remote control interface 30 transmits the remaining life information to the display device 60 through the control device 50, and the display device 60 displays the remaining life information of the replaced filter element to the user.

[0093] Fig. 6 is a flow chart of a method for managing and controlling a filter element based on a water purifying system, according to an exemplary embodiment. As illustrated in Fig. 6, the method for managing and controlling a filter element based on a water purifying system is used in a water purifying system (referring to the water purifying system provided by the present disclosure), and the method may include the following steps.

[0094] In step S601, identification information of a filter element in a water purifying device is acquired.

[0095] The identification information may include the information like a model number, a manufacturer and technical parameters of the filter element.

[0096] In step S602, the identification information is transmitted to a manufacturer data management centre in the water purifying device.

[0097] In step S603, a verification result of the identification information returned by the manufacturer data management centre is received.

[0098] In step S604, the filter element is processed according to the verification result.

[0099] The processing the filter element according to the verification result may include the following situations.

[00100] In the first situation, when the verification result prompts that the filter element is correct, the water quality information of water filtered by the filter element is acquired and transmitted to the manufacturer data management centre; and the remaining life information of the filter element returned by the manufacturer data management centre is received, the remaining life information of the filter element being determined by the manufacturer data management centre according to the water quality information and

technical parameters contained in the identification information. Based on this, the remaining life information of the filter element may also be displayed to the user.

[00101] In the second situation, when the verification result prompts that the filter element is correct, water quality information of water filtered by the filter element is acquired and transmitted to the manufacturer data management centre; a judgment result returned by the manufacturer data management centre regarding whether the filter element needs to be replaced is received, the judgment result being judged by the manufacturer data management centre according to the water quality information; and the user is prompted to replace the filter element when the judgment result is that the filter element needs to be replaced.

[00102] In the third situation, when the verification result prompts that the filter element is wrong, the user is prompted to replace the filter element. For example, if the user wrongly uses a filter element which is not matched with the model number of the original water purifying device, wrong filter element information will be displayed, and the user will be prompted to replace the filter element, so as to ensure the life of the filter element and ensure that the water purifying device can achieve a water purifying effect.

[00103] In the fourth situation, when the verification result prompts that no filter element is installed, the user is prompted to adjust a position of the filter element or install a filter element. When the filter element is not installed properly or the filter element is pulled out, it will be deemed that the filter element is not installed, and the user adjusts the position of the filter element according to the prompting information, so that the filter element is installed in a correct position, and the normal working of the filter element can be ensured.

[00104] The method for managing and controlling a filter element based on a water purifying system provided by the embodiment can ensure that the user uses a correct filter element, and prompt the user to replace the filter element in time, thus ensuring the water purifying quality and service life of the water purifying device.

[00105] Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed here. This application is intended to cover any variations, uses, or adaptations of the invention following the general principles thereof and including such departures from the present disclosure as come within known or customary practice in the art. It is intended that the specification and

examples be considered as exemplary only, with a true scope and spirit of the invention being indicated by the following claims.

[00106] It will be appreciated that the present invention is not limited to the exact construction that has been described above and illustrated in the accompanying drawings, and that various modifications and changes can be made without departing from the scope thereof. It is intended that the scope of the invention should only be limited by the appended claims.

WHAT IS CLAIMED IS:

1. A water purifying system, comprising a water purifying device, wherein the water purifying device comprises a filter element for filtering water, and the water purifying system further comprises:

a filter element identification device which is provided on the filter element and is used for identifying the filter element;

a filter element recognition device for reading identification information of the filter element identification device; and

a remote control interface for sending the identification information read by the filter element recognition device to a manufacturer data management centre.

2. The water purifying system according to claim 1, wherein the water purifying system further comprises:

a water property detection device for detecting properties of water filtered by the filter element; and

a control device which is connected with the water property detection device and the remote control interface and is used for storing and processing output information of the water property detection device.

3. The water purifying system according to claim 1, wherein the water purifying system further comprises:

a display device which is connected with the control device and is used for displaying a usage state of the filter element.

4. The water purifying system according to any one of claims 1 to 3, wherein the water purifying system further comprises:

a transit device connected with the water purifying device.

5. The water purifying system according to claim 4, wherein the filter element recognition device is provided in the water purifying device or the transit device.

6. The water purifying system according to claim 4, wherein the remote control interface is provided in the water purifying device or the transit device.

7. The water purifying system according to claim 4, wherein the control device is provided in the water purifying device or the transit device.

8. The water purifying system according to claim 4, wherein the display device is provided in the water purifying device or the transit device.

9. The water purifying system according to claim 4, wherein the transit device is provided inside the water purifying device.

10. A method for managing and controlling a filter element based on the water purifying system according to any one of claims 1 to 3 and claims 5 to 9, comprising:

- acquiring identification information of a filter element in a water purifying device;
- transmitting the identification information to a manufacturer data management centre of the water purifying device;
- receiving a verification result of the identification information returned by the manufacturer data management centre; and
- processing the filter element according to the verification result.

11. The method for managing and controlling a filter element according to claim 10, wherein the processing the filter element according to the verification result comprises:

- acquiring and transmitting water quality information of water filtered by the filter element to the manufacturer data management centre when the verification result prompts that the filter element is correct; and

- receiving remaining life information of the filter element returned by the manufacturer data management centre, the remaining life information of the filter element being determined by the manufacturer data management centre according to the water quality

information and technical parameters contained in the identification information.

12. The method for managing and controlling a filter element according to claim 11, wherein the processing the filter element according to the verification result further comprises:

displaying the remaining life information of the filter element.

13. The method for managing and controlling a filter element according to claim 10, wherein the processing the filter element according to the verification result comprises:

acquiring and transmitting water quality information of water filtered by the filter element to the manufacturer data management centre when the verification result prompts that the filter element is correct;

receiving a judgment result returned by the manufacturer data management centre regarding whether the filter element needs to be replaced, the judgment result being judged by the manufacturer data management centre according to the water quality information; and

prompting a user to replace the filter element when the judgment result is that the filter element needs to be replaced.

14. The method for managing and controlling a filter element according to claim 10, wherein the processing the filter element according to the verification result comprises:

prompting a user to replace the filter element when the verification result prompts that the filter element is wrong.

15. The method for managing and controlling a filter element according to claim 10, wherein the processing the filter element according to the verification result comprises:

prompting a user to adjust a position of the filter element or install a filter element when the verification result prompts that no filter element is installed.