pressure will increase in the future.

[0172] In the above, the description has been made of the example of the estimation performed by the estimation unit 74 based on a time from the start of the backwashing step until the pressure on the primary side stabilizes at the end pressure. The present invention is not, however, limited thereto, and the estimation unit 74 may perform various kinds of estimations based on a pressure (peak) at a reaching point of the pressure on the primary side that has instantaneously increased immediately after the start of the backwashing step.

[0173] [Estimation of Magnitude of Pipeline Resistance]

For example, as shown in FIG. 11, immediately after the start of the backwashing step, when a part of the raw water on the primary side of the raw water space S1 is discharged from the drain port 12D to the outside of the system, because the drain port 12D has an inner diameter smaller than the inner diameter of the housing 12, pipeline resistance is generated. Due to this pipeline resistance, the pressure on the primary side measured by the primary side pressure sensor 61 instantaneously increases (the elapsed time t111). In addition, the more serious the contamination in the drain pipe 53 connected to the drain port 12D, the higher the pipeline resistance when the drain water on the primary side is drained, so that the pressure on the primary side increases.

[0174] Therefore, the estimation unit 74 may estimate a magnitude of the pipeline resistance of the drain pipe 53 (FIG. 1) based on the peak of the pressure on the primary side that has instantaneously increased immediately after the start of the backwashing step.

[0175] The present configuration can be realized, for example, as follows. The estimation unit 74 performs the estimation processing illustrated in FIG. 5 at the end of the filtration process. In Step S51, the estimation unit 74 refers to the logging data of the pressure on the primary side stored in the storage unit 71 during the backwashing step in the past filtration process. The past filtration process is, for example, a filtration process that is first performed immediately after installation of the water treatment device 1 or after maintenance of the same. Then, the estimation unit 74 extracts a peak value (e.g., P121 in FIG. 12) of the pressure on the primary side, which has instantaneously increased immediately after the start of the backwashing step, as the first change information.

[0176] In Step S52, the estimation unit 74 refers to the logging data of the pressure on the primary side stored in the storage unit 71 during the backwashing step of the current filtration process. Then, the estimation unit 74 extracts a peak value (e.g., P122 in FIG. 12) of the pressure on the primary side that has instantaneously increased immediately after the start of the backwashing step as the second change information in the same manner as in Step S51.

[0177] In Step S53, the estimation unit 74 subtracts the peak value (e.g., P121) of the pressure on the primary side extracted as the first change information in Step S51 from the peak value (e.g., P122) of the pressure on the primary side extracted as the second change information in Step S52. The estimation unit 74 acquires the subtraction result (e.g., P122 – P121) as a difference between the first change information extracted in Step S51 and the second change information extracted in

Step S52.

[0178] In Step S54, the estimation unit 74 estimates a magnitude of the pipeline resistance of the drain pipe 53 (FIG. 1) based on the difference acquired in Step S53. Specifically, it is presumed that the larger the difference acquired in Step S53, the more serious the contamination in the drain pipe 53 and the higher the pipeline resistance of the drain pipe 53 when the drain water on the primary side is drained.

[0179] Therefore, when the difference acquired in Step S53 is larger than a predetermined positive seventh threshold value, the estimation unit 74 estimates that the pipeline resistance of the drain pipe 53 is very high state. When the difference acquired in Step S53 is a positive value and is equal to or smaller than the seventh threshold value, the estimation unit 74 estimates that the pipeline resistance of the drain pipe 53 is high state. When the difference acquired in Step S53 is a negative value and is larger than a predetermined negative eighth threshold value, the estimation unit 74 estimates that the pipeline resistance of the drain pipe 53 is low state. When the difference acquired in Step S53 is equal to or smaller than the eighth threshold value, the estimation unit 74 estimates that the pipeline resistance of the drain pipe 53 is extremely low state.

[0180] In Step S55, the estimation unit 74 outputs, as the information indicating a result of the estimation, information indicating that the pipeline resistance of the drain pipe 53 is very high state, high state, low state, or very low state, the information being estimated in Step S54.

[0181] In this case, how much the drain pipe 53 is contaminated can be grasped by grasping how high the pipeline resistance of the drain pipe 53 (FIG. 1) as a primary side drain pipeline is without disassembling the hollow fiber membrane module 10. Therefore, when it is estimated that the pipeline resistance of the drain pipe 53 is high state, the drain pipe 53 can be quickly washed to suppress accumulation of the drain water inside the hollow fiber membrane module 10 during the backwashing step. As a result, the washing capability of the hollow fiber membrane 11 by the backwashing step can be quickly restored.

[0182] Note that in the above, the description has been made of the example in which the estimation unit 74 estimates a magnitude of the pipeline resistance of the drain pipe 53 based on the logging data of the primary side pressure in the plurality of times of the backwashing step. The present invention is not, however, limited thereto, and the estimation unit 74 may estimate a magnitude of the pipeline resistance of the drain pipe 53 based on the logging data of the primary side pressure in one backwashing step.

[0183] The present configuration can be realized, for example, as follows. The estimation unit 74 performs the estimation processing shown in FIG. 4, and in Step S41, based on the logging data of the primary side pressure in one backwashing step, extracts the peak value of the pressure on the primary side that has instantaneously increased immediately after the start of the backwashing step as the change information. Then, in Step S42, the estimation unit 74 subtracts, from the peak value extracted in Step S41 as the change information, the peak value of the pressure on the primary side that has instantaneously increased immediately after the start of the backwashing step, the peak value being determined in advance based on the experimental value or the like. Similarly to Step