[CLAIMS]

[Claim 1]

A chemical dosing control method of controlling a chemical dosage of a slime control agent added to water to be treated supplied to a reverse osmosis membrane system, comprising

controlling the chemical dosage based on a rate of change in an index value related to fouling of the reverse osmosis membrane system,

wherein the index value is a differential pressure or water supply pressure on a non-permeable side of the reverse osmosis membrane system,

the rate of change in the index value has a positive correlation with a progress rate of fouling, and when an average rate of change in the index value in a set sampling period is equal to or less than a threshold value A, the chemical dosage is reduced by a specific amount,

the differential pressure on the non-permeable side is the difference between a pressure of the water to be treated supplied to the reverse osmosis membrane system and a pressure of a concentrated water removed from the reverse osmosis membrane system.

[Claim 2]

The chemical dosing control method according to claim 1,

wherein the chemical dosage is controlled so that the concentration of the slime control agent contained in the water to be treated supplied to the reverse osmosis membrane system changes.

[Claim 3]

The chemical dosing control method according to claim 1,

wherein addition of the slime control agent to the water to be treated is intermittent addition including an addition process and a pause process, and

wherein the chemical dosage is controlled by changing a time of at least one of the addition process and the pause process.

[Claim 4]

The chemical dosing control method according to claim 1,

wherein an optimal chemical dosing level search mode is provided in which

a plurality of chemical dosing levels with different chemical dosages are set, when control starts, chemical dosing starts at a predetermined chemical dosing level that is preset, and whenever the sampling period elapses, the average rate of change in the index value in the sampling period is compared with the threshold value A,

when the average rate of change is equal to or less than the threshold value A, a process of reducing the chemical dosage to a level one or more steps lower is repeatedly performed, and

when the average rate of change exceeds the threshold value A, the chemical dosing level is maintained without change, or the chemical dosage is increased to a level one or more steps higher, and the chemical dosing level is set as an optimal chemical dosing level.

[Claim 5]

The chemical dosing control method according to claim 4,

wherein a stable operation mode is provided in which an operation continues at the optimal chemical dosing level after the optimal chemical dosing level is determined in the optimal chemical dosing level search mode.

[Claim 6]

The chemical dosing control method according to claim 5,

wherein, in the stable operation mode,

whenever the set sampling period elapses, the average rate of change in the sampling period is compared with the threshold value A, and when the average rate of change is equal to or less than the threshold value A, a process of continuing an operation with the same chemical dosing level is repeatedly performed, and in the operation with the same chemical dosing level, when comparison between the average rate of change and the threshold value A has been consecutively performed n times, the chemical dosage is reduced to a level one or more steps lower.

[Claim 7]

The chemical dosing control method according to claim 1,

wherein a stable operation mode is provided in which a plurality of chemical dosing levels with different chemical dosages are set, chemical dosing is performed at a predetermined chemical dosing level, and whenever the sampling period elapses, the average rate of change in the sampling period is compared with the threshold value A, and when the average rate of change is equal to or less than the threshold value A, a process of continuing an operation with the same chemical dosing level is repeatedly performed, and in the operation with the same chemical dosing level, when comparison between the average rate of change and the threshold value A has been consecutively performed n times, the chemical dosage is reduced to a level one or more steps lower.

[Claim 8]

The chemical dosing control method according to any one of claims 5 to 7,

wherein, in the stable operation mode, whenever the sampling period elapses, the average rate of change is compared with the threshold value A, and when the average rate of change is larger

than the threshold value A, the chemical dosage is increased to a level j steps higher (j is an integer of 1 or more).

[Claim 9]

The chemical dosing control method according to claim 8,

wherein, in the stable operation mode, for the threshold value, a threshold value B larger than the threshold value A is set,

wherein, whenever the sampling period elapses, the average rate of change is compared with the threshold value B, and

wherein, when the average rate of change is larger than the threshold value B, the chemical dosage is increased to a level m steps higher (m is an integer of 2 or more).