CLAIMS

[Claim 1]

A method for controlling concentration of a cooling-water treatment chemical in a water treating system comprising a circulating cooling-water system including the cooling-water treatment chemical, and a water recovery system that treats water discharged from the circulating cooling-water system through a separation membrane and returns the treated water to the circulating cooling-water system, the method comprising controlling the concentration of the cooling-water treatment chemical in the circulating cooling-water system on the basis of a change in the performance of the separation membrane.

[Claim 2]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to Claim 1, wherein the concentration of the cooling-water treatment chemical is controlled on the basis of a change in at least one selected from pressure applied onto the separation membrane, quality of the treated water, and an amount of the treated water.

[Claim 3]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to Claim 1 or 2, wherein the

concentration of the cooling-water treatment chemical in the circulating cooling-water system is controlled to be equal to or higher than a predetermined concentration of the cooling-water treatment chemical at which the performance of the separation membrane is consistent.

[Claim 4]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to any one of Claims 1 to 3, wherein the cooling-water treatment chemical includes a slime-controlling agent and/or a scale dispersant.

[Claim 5]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to Claim 4, wherein the slime-controlling agent includes a combined-chlorine agent.

[Claim 6]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to Claim 4 or 5, wherein the cooling-water treatment chemical includes the slime-controlling agent and the scale dispersant, and wherein the concentration of one chemical selected from the slime-controlling agent and the scale dispersant is controlled first and the concentration of the other chemical is

subsequently controlled.

[Claim 7]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to any one of Claims 1 to 6, wherein the separation membrane is a reverse osmosis membrane.

[Claim 8]

The method for controlling the concentration of a cooling-water treatment chemical in a circulating cooling-water system according to Claim 7, wherein the water recovery system includes a microfiltration membrane or an ultrafiltration membrane that serves as a pretreatment membrane disposed upstream of the reverse osmosis membrane.

[Claim 9]

A method for recovering cooling effluent, the method comprising treating water discharged from a circulating cooling-water system including a cooling-water treatment chemical with a water recovery system including a separation membrane and returning the treated water to the circulating cooling-water system, wherein the concentration of the cooling-water treatment chemical in the circulating cooling-water system is controlled by the method for controlling the concentration of a cooling-water treatment chemical according to any one of Claims 1 to 8.

[Claim 10]

A water treating system comprising:

a circulating cooling-water system to which a cooling-water treatment chemical is added; and

an apparatus for treating water discharged from the circulating cooling-water system with a separation-membrane device and returning the treated water to the circulating cooling-water system,

wherein the water treating system comprises a chemical-concentration control unit that controls concentration of the cooling-water treatment chemical in the circulating cooling-water system on the basis of a change in the performance of the separation membrane.

[Claim 11]

The water treating system according to Claim 10, wherein the chemical-concentration control unit controls the concentration of the cooling-water treatment chemical on the basis of a change in at least one selected from pressure applied onto the separation membrane, quality of the treated water, and an amount of the treated water.

[Claim 12]

The water treating system according to Claim 10 or 11, wherein the chemical-concentration control unit controls the concentration of the cooling-water treatment chemical in the circulating cooling-water system to be equal to or higher

than a predetermined concentration of the cooling-water treatment chemical at which the performance of the separation membrane is consistent.

[Claim 13]

The water treating system according to any one of Claims 10 to 12, wherein the cooling-water treatment chemical includes a slime-controlling agent and/or a scale dispersant.

[Claim 14]

The water treating system according to Claim 13, wherein the slime-controlling agent includes a combined-chlorine agent.

[Claim 15]

The water treating system according to Claim 13 or 14, wherein the cooling-water treatment chemical includes the slime-controlling agent and the scale dispersant, and wherein the chemical-concentration control unit controls the concentration of one chemical selected from the slime-controlling agent and the scale dispersant first and subsequently controls the concentration of the other chemical.

[Claim 16]

The water treating system according to any one of Claims 10 to 15, wherein the separation-membrane device is a reverse-osmosis-membrane device.

[Claim 17]

The water treating system according to Claim 16, the apparatus further comprising a microfiltration-membrane device or an ultrafiltration-membrane device that serves as a pretreatment-membrane device disposed upstream of the reverse-osmosis-membrane device.