RO membrane (corresponding to the intermediate-pressure RO membrane 105 of FIG. 5) for desalinating, decreases. As a result, the power (energy) reduction effect for acquiring the permeation pressure of the RO membrane, decreases. In addition, the water-increase effect of the product water s102 also decreases.

[0018]

Thirdly, the energy recovery device 106 shows the higher efficiency in the high-pressure cases, however, since the intermediate-pressure RO membrane 105 is utilized, the energy recovery device 106 cannot be operated in the high efficiency zone. Therefore, it is difficult to acquire the high energy recovery ratio.

[0019]

Fourthly, it is hard to mention that the maintainability is favorable, since the different reverse osmosis membranes of the low-pressure RO membrane 102 and the intermediate-pressure RO membrane 105 are utilized.

Embodiments~~An object~~ of the present invention ~~is~~, in respect of the aforementioned actual condition, seek to provide a sea-water desalination system and a sea-water desalination method which are possible to produce the drinking water from the sea-water and also to water-increase the industrial water with inexpensive fresh-water-generation costs.

MEANS FOR SOLVING THE PROBLEM

[0020]

According to a first aspect, there is provided~~In order to achieve the aforementioned purpose, a sea-water desalination system according to Claim 1 is~~ a sea-water desalination system for acquiring the industrial water and the drinking water from the sea-water and the sewage water, comprising: a purification apparatus for removing activated sludge by permeating the sewage water and purifying; a first RO membrane for permeating the permeable water which permeated the purification apparatus and including and removing salinity thereof in first concentrated-water and also generating the industrial water; a UF membrane for removing particles in the sea-water by permeating the sea-water; a second RO membrane for permeating treated water which permeated the UF membrane and including and removing salinity of the treated water in second concentrated-water and also generating drinking water; a stirring apparatus for stirring the second concentrated-water removed by the second RO membrane and the first

concentrated-water removed by the first RO membrane being sent thereto; and a third RO membrane for permeating mixture fluid stirred by the stirring apparatus, and including and removing salinity thereof in third concentrated-water and also generating the industrial water.

A sea-water desalination method according to a second aspect~~Claim 5~~ is a method to realize a sea-water desalination system according to the first aspect~~Claim 1~~.

According to the second aspect, there is provided a sea-water desalination method for acquiring industrial water and drinking water from sea-water and sewage water, producing industrial water by making the sewage water permeate purification apparatus and first RO membrane; producing drinking water by making the sea-water permeate UF membrane and second RO membrane; and producing industrial water by making mixture fluid which mixed first concentrated-water removed by the first RO membrane and the second concentrated-water removed by the second RO membrane permeate third RO membrane.

[0021]

~~A sea-water desalination system~~ according to a third aspect, there~~Claim 3~~ is provided a sea-water desalination system for acquiring the industrial water and the drinking water from the sea-water and the sewage water, comprising: a purification apparatus for removing activated sludge by permeating the sewage water and purifying; a UF membrane for removing particles in the sea-water by permeating the sea-water; a first RO membrane for permeating treated water which permeated the UF membrane and including and removing salinity of the treated water in first concentrated-water and also generating the drinking water; a stirring apparatus for stirring the first concentrated-water removed by the first RO membrane and the treated water which permeated the purification apparatus being sent thereto; and a second RO membrane for permeating the mixture fluid stirred by the stirring apparatus, and including and removing salinity thereof in second concentrated-water and also generating the industrial water.

A sea-water desalination method according to a fourth aspect~~Claim 7~~ is a method to realize a sea-water desalination system according to the third aspect~~Claim 3~~.

According to the fourth aspect, there is provided a sea-water desalination method for acquiring industrial water and drinking water from sea-water and sewage water, removing activated sludge and purifying by making the sewage water permeate purification apparatus; producing drinking water by making the sea-water permeate UF membrane and first RO membrane; and producing industrial water by making mixture fluid which mixed first concentrated-water removed by the first RO membrane and the treated water which permeated the purification apparatus permeate second RO membrane.

EFFECT OF THE INVENTION

[0022]

The sea-water desalination system and the sea-water desalination method of the present invention can realize the sea-water desalination system and the sea-water desalination method which are capable of producing the drinking water from the sea-water and also to water-increase the industrial water with inexpensive fresh-water-generation costs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023]