CLAIMS

[Claim 1]

A membrane distillation device comprising:

a membrane module having a casing, an inside of the casing being divided into a primary side and a secondary side by a hydrophobic membrane;

liquid-being-processed circulation and supply means that has a feed-water tank and a feed-water pump and serves to circulate and supply a liquid-being-processed to the primary side of the membrane module;

a pressure reduction device that depressurizes the secondary side of the membrane module; and

communication means that allows communication between the secondary side of the membrane module and a gas phase part of the feed-water tank,

wherein the communication means is configured such that a differential pressure between the gas phase part of the feed-water tank and the secondary side of the membrane module is 20 to 90 kPa.

[Claim 2]

The membrane distillation device according to claim 1, wherein the communication means is a pipe, and an inside diameter of the pipe is equal to or smaller than a quarter of an inside diameter of a steam pipe that is connected to the secondary side so as to suction and discharge steam towards the pressure reduction device thereby depressurizing the secondary side.

[Claim 3]

A membrane distillation device comprising:

a membrane module having a casing, an inside of the casing being divided into a primary side and a secondary side by a hydrophobic membrane;

liquid-being-processed circulation and supply means that has a feed-water tank and a feed-water pump and serves to circulate and supply a liquid-being-processed to the primary side of the membrane module;

a pressure reduction device that depressurizes the secondary side of the membrane module; and

communication means that allows communication between the secondary side of the membrane module and a gas phase part of the feed-water tank,

wherein the communication means comprises differential pressure adjustment means for adjusting a differential pressure between the gas phase part of the feed-water tank and the secondary side of the membrane module to 20 to 90 kPa.

[Claim 4]

The membrane distillation device according to claim 3, wherein the communication means comprising the differential pressure adjustment means is a pipe provided with a valve.

[Claim 5]

A method for operating the membrane distillation device of claim 4, wherein a degree of opening of the valve is adjusted such that the differential pressure becomes 20 to 90 kPa.