Claims

[Claim 1]

A biological treatment device comprising:

a biological treatment water tank configured to treat organic substances contained in treatment water;

a membrane separation device including

a casing, and

a tubular filter membrane configured to partition the casing into a concentrated-side space to which outflow water flowing out from the biological treatment water tank is supplied and a permeation-side space in which permeated water separated from the outflow water is housed, and having a single-layer structure formed by copolymerization of hydrophilic monomers;

a pressurizing pump configured to pressurize the outflow water and supply water that is pressurized to the concentrated-side space;

a suction pump configured to suck the permeated water from the permeation-side space;

a pressure gauge configured to measure a pressure of the permeation-side space;

a return line configured to allow concentrated water discharged from the membrane separation device to return to the biological treatment water tank; and

a control device configured to control the pressurizing pump and the suction pump so that the flow rate of the permeated water are within ranges satisfying a planned value, and configured to control a supply amount of the outflow water supplied by the pressurizing pump according only to a measurement value of the pressure gauge wherein,

the control device is configured to increase the flow rate of the outflow water pressurized by the pressurizing pump in a case where an absolute value of the measurement value of the pressure gauge is greater than a threshold value.

[Claim 2]

The biological treatment device according to claim 1 further comprising:

an excess sludge discharge part configured to draw out excess sludge from the return line; and

a water level measuring device configured to measure a water level of the biological treatment water tank;

wherein the control device controls an amount of excess sludge drawn out from the excess sludge discharge part on the basis of a measurement value of the water level measuring device.

[Claim 3]

The biological treatment device according to claim 2 further comprising a water level measuring device configured to measure the water level of the biological treatment water tank;

wherein the control device controls the flow rate of treatment water supplied to the biological treatment water tank on the basis of the measurement value of the water level measuring device.

[Claim 4]

The biological treatment device according to any one of claims 1-3 wherein the biological treatment water tank is a methane fermentation tank, microorganisms in the methane fermentation tank breaking down organic substances contained in the treatment water.