CLAIMS

1. A wastewater treatment method comprising a sequencing batch biological treatment process to biologically treat wastewater using a sequencing batch biological treatment tank containing biological sludge, the sequencing batch biological treatment process comprising:

a biological treatment process to biologically treat the wastewater using the biological sludge by stirring the wastewater in the sequencing batch biological treatment tank under conditions where supply of the wastewater to the sequencing batch biological treatment tank and discharge of treated water from the sequencing batch biological treatment tank are both stopped; and

a wastewater supply and treated water discharge process in which

(a) the supply of the wastewater to the sequencing batch biological treatment tank and the discharge of the treated water from the sequencing batch biological treatment tank are started at the same time; or

(b) the supply of the wastewater to the sequencing batch biological treatment tank is started and the discharge of the treated water from the sequencing batch biological treatment tank is started in a period after the supply of the wastewater is started and before the supply of the wastewater is stopped,

wherein (a) or (b) takes place in a period after the stirring of the wastewater in the sequencing batch biological treatment tank has been stopped and before a sludge blanket of the biological sludge is formed in the sequencing batch biological treatment tank,

wherein the biological treatment process and the wastewater supply and treated water discharge process are sequentially repeated.

2. The wastewater treatment method according to claim 1, wherein in the wastewater

supply and treated water discharge process, the supply of the wastewater to the sequencing batch biological treatment tank and the discharge of the treated water from the sequencing batch treatment tank are both started at the same time as or immediately after the stirring of the wastewater in the sequencing batch biological treatment tank is stopped.

3. The wastewater treatment method according to claim 1 or 2, wherein the wastewater treatment method further comprises:

a continuous biological treatment process to biologically treat the wastewater that is continuously supplied to a continuous biological treatment tank containing biological sludge;

a biological sludge supply process to supply granules formed in the sequencing batch biological treatment process to the continuous biological treatment tank;

a treated water supply process to supply the treated water discharged in the sequencing batch biological treatment process to the continuous biological treatment tank; and

a wastewater supply amount adjustment process to reduce an amount of the wastewater supplied to the continuous biological treatment tank in response to the supply of the granules in the biological sludge supply process and the supply of the treated water in the treated water supply process.

4. The wastewater treatment method according to claim 3, wherein, in the wastewater supply amount adjustment process, the amount of the wastewater supplied to the continuous biological treatment tank is reduced to zero in response to the supply of the granules in the biological sludge supply process and the supply of the treated water in the treated water supply process.

5. The wastewater treatment method according to any one of claims 1 to 4, wherein the sequencing batch biological treatment tank comprises:

a wastewater inlet for supplying the wastewater to the tank; and

a treated water outlet for discharging the treated water from the tank or a sludge and treated water outlet for discharging the treated water and the granules from the tank, the treated water outlet and the sludge and treated water outlet being disposed higher than the wastewater inlet.

6. A wastewater treatment device comprising:

a sequencing batch biological treatment tank that contains biological sludge;

a supply unit that supplies wastewater to the sequencing batch biological treatment tank;

a discharge unit that discharges treated water from the sequencing batch biological treatment tank;

a stirring unit that stirs the wastewater in the sequencing batch biological treatment tank;

a first controller that controls activation of the stirring unit; and

a second controller that controls activation of the supply unit and the discharge unit,

wherein, when biologically treating the wastewater with the biological sludge, the first controller activates the stirring unit to stir the wastewater in the sequencing batch biological treatment tank under conditions where the supply of the wastewater to the sequencing batch biological treatment tank and the discharge of the treated water from the sequencing batch biological treatment tank are both stopped; and

the second controller activates

(a) the supply unit and the discharge unit to start the supply of the wastewater to the sequencing batch biological treatment tank and the discharge of the treated water from the sequencing batch biological treatment tank at the same time, or

(b) the supply unit to start the supply of the wastewater to the sequencing

batch biological treatment tank, and the discharge unit to start the discharge of the treated water from the sequencing batch biological treatment tank in a period after the supply of the wastewater is started and before the supply of the wastewater is stopped,

wherein (a) or (b) takes place in a period after the stirring of the wastewater by the stirring unit has been stopped and before a sludge blanket of the biological sludge is formed in the sequencing batch biological treatment tank.

7. The wastewater treatment device according to claim 6, wherein the second controller activates the supply unit to start the supply of the wastewater to the sequencing batch biological treatment tank and the discharge unit to start the discharge of the treated water from the sequencing batch biological treatment tank at the same time as or immediately after the stirring of the wastewater by the stirring unit is stopped.

8. The wastewater treatment device according to claim 6 or 7, wherein the second controller controls the supply unit and the discharge unit such that an amount of the wastewater supplied to the sequencing batch biological treatment tank and an amount of the treated water discharged from the sequencing batch biological treatment tank are equal to each other.

9. The wastewater treatment device according to any one of claims 6 to 8, wherein

the sequencing batch biological treatment tank comprises a wastewater inlet for supplying the wastewater to the tank and a treated water outlet for discharging the treated water from the tank; and

the wastewater inlet is disposed lower than the treated water outlet.

10. The wastewater treatment device according to claim 9, wherein the treated water outlet is disposed at a water surface level of the wastewater in the sequencing batch biological

treatment tank when the discharge of the treated water is stopped.

11. The wastewater treatment device according to any one of claims 6 to 10,

wherein the wastewater treatment device further comprises:

a continuous biological treatment device that biologically treats continuously supplied wastewater;

a biological sludge supply unit that supplies granules formed in the sequencing batch biological treatment tank to the continuous biological treatment device;

a treated water supply unit that supplies the treated water discharged from the sequencing batch biological treatment tank to the continuous biological treatment device; and

a wastewater supply amount adjustment unit that adjusts an amount of the wastewater supplied to the continuous biological treatment device, and

the wastewater supply amount adjustment unit reduces an amount of the wastewater supplied to the continuous biological treatment device in response to the supply of the granules by the biological sludge supply unit and the supply of the treated water by the treated water supply unit.

12. The wastewater treatment device according to claim 11, wherein the wastewater supply amount adjustment unit reduces the amount of the wastewater supplied to the continuous biological treatment device to zero in response to the supply of the granules by the biological sludge supply unit and the supply of the treated water by the treated water supply unit.

13. The wastewater treatment device according to any one of claims 6 to 8, wherein the sequencing batch biological treatment tank comprises:

a wastewater inlet for supplying the wastewater to the tank; and

a treated water outlet for discharging the treated water from the tank or a sludge

and treated water outlet for discharging the treated water and the granules from the tank, the treated water outlet and the sludge and treated water outlet being disposed higher than the wastewater inlet.