CLAIMS

[Claim 1]

An aerobic biofilm treatment method comprising supplying raw water to an aeration tank, aerating the aeration tank using an aeration device, and subjecting a substance to be removed in the raw water to an aerobic biological treatment using a biofilm retaining carrier in the aeration tank, wherein

a relationship between a raw water biofilm load, which is a raw water load per carrier, and a corresponding DO target value and/or a corresponding aeration intensity set value is set in advance,

the DO target value and/or the aeration intensity set value is adjusted based on the relationship according to a fluctuation of a measured value of the raw water biofilm load, and

the aeration device is controlled such that the DO becomes the target value or the aeration intensity becomes the set value, and

wherein the raw water biofilm load is any of the load of a substance to be removed per packing volume of the carrier, and the load of a substance to be removed per total surface area of a carrier group.

[Claim 2]

The aerobic biofilm treatment method according to claim 1, wherein

the substance to be removed is organic matter, a nitrogen compound, or an ammonium ion, and

the raw water biofilm load is calculated from

a calculated value of a concentration converted from a measured value of a concentration of the substance to be removed or a measured value of an absorbance,

a measured value of a raw water flow rate, and

a measured value or a calculated value of a packing volume or a surface area of the carrier.

[Claim 3]

The aerobic biofilm treatment method according to claim 1 or 2, wherein the aeration intensity is controlled by controlling an aeration air volume, an aeration stop time, or an aeration suppression time.

[Claim 4]

The aerobic biofilm treatment method according to any one of claims 1 to 3, wherein the relationship is set using any of an experimental result, an operation result of an actual machine, and a mechanism model considering diffusivity of oxygen in the biofilm.

[Claim 5]

An aerobic biofilm treatment device comprising an aeration tank to which raw water is supplied, an aeration device that aerates the aeration tank, a biofilm-attached carrier in the aeration tank, and a controller that controls the aeration device,

wherein the device further comprises:

a setting unit that sets in advance a relationship between a raw water biofilm load, which is a raw water load per carrier, and a corresponding DO target value and/or a corresponding aeration intensity set value; and

an adjusting unit that adjusts the DO target value and/or the aeration intensity set value based on the relationship according to a fluctuation of a measured value of the raw water biofilm load, and

wherein the controller controls the aeration apparatus such that the DO becomes the target value or the aeration intensity becomes the set value, and

wherein the raw water biofilm load is any of the load of a substance to be removed per packing volume of the carrier, and the load of a substance to be removed per total surface area of a carrier group.