CLAIMS

[Claim 1]

A water treatment facility operation assistance system for supporting the operation of a water treatment facility, comprising:

a data storage unit that accumulates state quantities indicating the operational condition of the water treatment facility transmitted from the water treatment facility;

a period input unit for inputting a period for which a simulation is to be performed;

an operating condition selection unit that selects at least one operating condition from a plurality of operating conditions related to the operation of the water treatment facility;

a control target value setting unit that calculates a control target value corresponding to the operating condition selected by the operating condition selection unit;

a simulation unit that, based on the state quantities stored in the data storage unit and the control target value calculated by the control target value setting unit, performs a simulation to predict at least one of the state quantities of the water treatment facility; and

an output unit that outputs transition information indicating a transition of the state quantity during the period inputted to the period input unit as the simulation results from

the simulation unit.

[Claim 2]

The water treatment facility operation assistance system according to claim 1, wherein

the operating condition selection unit is configured to set a plurality of operating conditions for each of a plurality of items that serve as operating indicators, and to select at least one operating condition from the plurality of operating conditions for each of the items.

[Claim 3]

The water treatment facility operation assistance system according to claim 1 or 2, wherein

the control target value setting unit calculates the control target value corresponding to the operating condition based on a value previously assigned to each of the operating conditions based on the knowledge of an experienced operator, or calculates the control target value based on past state quantity data from operation by an experienced operator classified by AI (Artificial Intelligence).

[Claim 4]

A water treatment facility operation assistance system for supporting the operation of a water treatment facility,

comprising:

a data storage unit that accumulates state quantities indicating the operational condition of the water treatment facility transmitted from the water treatment facility;

a period input unit for inputting a period for which a simulation is to be performed;

a control target value input unit for inputting control target values related to the operation of the water treatment facility;

an operating condition display unit that displays at least one operating condition among a plurality of operating conditions corresponding to the control target values inputted through the control target value input unit;

a simulation unit that performs a simulation related to the operation of the water treatment facility based on the state quantities stored in the data storage unit and the control target values entered in the control target value input unit; and

an output unit that outputs transition information indicating a transition of the state quantity during the period inputted to the period input unit as the simulation results from the simulation unit.

[Claim 5]

The water treatment facility operation assistance system according to claim 4, wherein

the operating condition display unit sets a plurality of operating conditions for each of a plurality of items that serve as operating indicators, and displays the respective operating conditions for each of the items that correspond to the control target values inputted in the control target value input unit.

[Claim 6]

The water treatment facility operation assistance system according to any one of claim 1, claim 2, claim 4 or claim 5, wherein

the water treatment facility includes a biological reaction tank that stores activated sludge, and the simulation unit performs a simulation of at least one of the water quality in the biological reaction tank and the water quality discharged from the biological reaction tank.

[Claim 7]

The water treatment facility operation assistance system according to any one of claim 1, claim 2, claim 4, or claim 5, wherein

the water treatment facility includes at least a sedimentation tank that settles solids of activated sludge and obtains a supernatant liquid, and the simulation unit performs a simulation of at least the sludge interface height in the

sedimentation tank.

[Claim 8]

The water treatment facility operation assistance system according to any one of claim 1, claim 2, claim 4, or claim 5, wherein

the water treatment facility includes a biological reaction tank that stores activated sludge and a storage tank that temporarily stores water flowing into the biological reaction tank, and the simulation unit performs a simulation of at least the water level in the storage tank.

[Claim 9]

A water treatment facility operation assistance method for supporting the operation of a water treatment facility, comprising:

a data storage step for accumulating state quantities indicating the operational condition of the water treatment facility transmitted from the water treatment facility;

a period input step for inputting a period for which a simulation is to be performed;

an operating condition selection step for selecting at least one operating condition from a plurality of operating conditions related to the operation of the water treatment facility;

a control target value setting step for calculating a control target value corresponding to the operating condition selected in the operating condition selection step;

a simulation step for performing a simulation to predict at least one of the state quantities of the water treatment facility based on the state quantities stored in the data storage step and the control target value calculated in the control target value setting step; and

an output step for outputting transition information indicating a transition of the state quantity during the period inputted to the period input step as the simulation results from the simulation step.

[Claim 10]

A water treatment facility operation assistance method for supporting the operation of a water treatment facility, comprising:

a data storage step for storing state quantities indicating the status of the water treatment facility transmitted from the water treatment facility;

a period input step for inputting a period for which a simulation is to be performed;

a control target value input step for accumulating state quantities indicating the condition of the water treatment facility transmitted from the facility;

a control target value input step for inputting control target values associated with the operation of the water treatment facility;

an operating condition display step for displaying at least one operating condition from a plurality of operating conditions corresponding to the control target values entered in the control target value input step;

a simulation step for performing a simulation related to the operation of the water treatment facility based on the state quantities stored in the data storage step and the control target values entered in the control target value input step; and

an output step for outputting transition information indicating a transition of the state quantity during the period inputted to the period input step as the simulation results from the simulation step.