CLAIMS

1. A ballast water treatment system including a water treatment apparatus which removes a substance to be removed from ballast water, and a ballast tank which stores the ballast water treated by the water treatment apparatus installed on a ship, the ballast water treatment system characterized by comprising:

a monitoring apparatus which monitors a water quality of the ballast water; and

a control apparatus which controls an operational condition of the water treatment apparatus based on a monitoring result of the monitoring apparatus.

2. The ballast water treatment system according to claim 1, wherein

the water treatment apparatus comprises:

a coagulation apparatus which coagulates the substance to be removed by injecting a coagulant into and agitating the ballast water; and

a separation/removal apparatus which separates and removes aggregates which occurs in the coagulation apparatus.

3. The ballast water treatment system according to claim 2, wherein

the control apparatus controls the coagulation apparatus based on the monitoring result of the monitoring apparatus to adjust an injection amount of the coagulant.

4. The ballast water treatment system according to claim 2 or 3, wherein

the separation/removal apparatus is configured as a combination of a magnetic separation and a filter separation.

5. The ballast water treatment system according to any one of claims 1 to 4, wherein

the monitoring apparatus monitors the ballast water by measuring at least one of a turbidity and a chromaticity of the ballast water.

6. The ballast water treatment system according to any one of claims 1 to 4, wherein

the monitoring apparatus monitors the ballast water by performing an image analysis of the ballast water.

7. The ballast water treatment system according to any one of claims 1 to 6, wherein

the control apparatus controls a treatment volume that is treated by the water treatment apparatus per unit time.

8. The ballast water treatment system according to any one of claims 1 to 7, wherein

the monitoring apparatus monitors the water quality of the ballast water at an inlet part of the water treatment apparatus, at an outlet part of the water treatment apparatus, and/or in the ballast tank.

9. The ballast water treatment system according to any one of claims 1 to 8, wherein

the ballast water treatment system comprises a line for returning the ballast water in the ballast tank or the ballast water to be discharged from the ballast tank to the outside to the water treatment apparatus, and the ballast water is retreated by the water treatment apparatus.

CLAIMS

1. A method for treating a ballast water for vessel, comprising:

an intake and discharge step of taking-in and discharging a ballast water with a pump provided in a vessel;

a ballast water treatment step of treating the ballast water with a ballast water treatment apparatus provided in the vessel; and

a monitoring step of monitoring a water quality of a treated water which has been treated with the ballast water treatment apparatus, wherein

in the ballast water treatment apparatus, substances to be removed are removed from the ballast water with a physical removal apparatus and the ballast water is sterilized with a sterilizing apparatus so that the ballast water satisfies a permissible value of less than 10 viable organisms per cubic meter for viable organisms greater than or equal to 50 micrometers in minimum dimension.

2. A method for treating a ballast water for vessel, comprising:

an intake and discharge step of taking-in and discharging a ballast water with a pump provided in a vessel;

a ballast water treatment step of treating the ballast water with a ballast water treatment apparatus provided in the vessel; and

a monitoring step of monitoring a water quality of a treated water which has been treated with the ballast water treatment apparatus, wherein

in the ballast water treatment apparatus, substances to be removed are removed from the ballast water with a physical removal apparatus and the ballast water is sterilized with a sterilizing apparatus so that the ballast water satisfies a permissible value of less than 10 viable organisms per milliliter for viable organisms less than 50 micrometers in minimum dimension and greater than or equal to 10 micrometers in minimum dimension.

3. The method for treating a ballast water for vessel according to claim 1 or 2, further comprising

adjusting a treatment flow rate per unit time in the ballast water treatment apparatus by adjusting a revolutional speed of the pump.

4. The method for treating a ballast water for vessel according to claim 1 or 2, further comprising

adjusting a treatment flow rate per unit time in the ballast water treatment apparatus by adjusting a an opening degree of a valve which is provided between the pump and the ballast water treatment apparatus.

5. The method for treating a ballast water for vessel according to claim 1 or 2, further comprising

reducing a treatment flow rate per unit time in the ballast water treatment apparatus when the water quality of the ballast water deteriorates or a concentration of aquatic organisms in the ballast water increases.