CLAIMS

1. A pretreatment desulfurization control and monitoring system for a pretreatment desulfurization system of a marine engine, characterized in that the pretreatment desulfurization control and monitoring system comprises~~comprising~~:

~~a pretreatment desulfurization agent tank for storing a liquid-phase pretreatment desulfurization agent;~~

a fuel injection amount sensor installed on a fuel supply line between a fuel tank and the~~a~~ marine engine, the fuel injection amount sensor~~and~~ configured to detect an injection amount of a marine fuel oil;

a pretreatment desulfurization agent ~~injection~~ amount sensor disposed between a~~the~~ pretreatment desulfurization agent tank and a downstream fuel supply line installed downstream of the fuel injection amount sensor, the pretreatment desulfurization agent amount sensor configured to detect an amount of pretreatment desulfurization agent mixed with the marine fuel oil;

an RPM sensor added to the marine engine and configured to detect the number of revolutions per minute (RPM) of the marine engine;

a gas sensor added to an exhaust port of the marine engine and configured to detect the concentration of sulfur oxides in an exhaust gas discharged from the marine engine; ~~and~~

a control panel connected to the sensors, an actuator for actuating a valve connected to the fuel tank and an actuator for actuating a valve connected to the pretreatment desulfurization agent tank, in a bi-directionally communicable manner;

wherein, ~~and~~the control panel, in response to detecting an increase or decrease in angular velocity of the marine engine detected by the RPM sensor or in response to detecting

an increase or decrease in the concentration of sulfur oxides in the exhaust gas of the marine engine by the gas sensor, is configured to increase or decrease the ~~control and monitor the injection~~ amount of the pretreatment desulfurization agent such that the pretreatment desulfurization agent is mixed with the marine fuel oil in ~~a predetermined mixing ratio~~ an amount ranging from 0.1 to 10 parts by weight with respect to 100 parts by weight of the marine fuel oil. ~~.~~

~~2. The system according to claim 1, further comprising an RPM sensor added to the marine engine and configured to detect the number of revolutions per minute (RPM) of the marine engine~~

~~3. The system according to claim 1, further comprising a gas sensor added to an exhaust port of the marine engine and configured to detect the concentration of sulfur oxides in an exhaust gas discharged from the marine engine.~~

~~4.~~ 2. The system according to claim 1, further comprising a water level sensor added to the pretreatment desulfurization agent tank and configured to detect a water level.

~~5.~~ 3. The system according to claim 2~~4~~, wherein a large capacity reservoir tank for storing the pretreatment desulfurization agent for replenishment is connected to the pretreatment

desulfurization agent tank, and the pretreatment desulfurization agent is automatically replenished from the reservoir tank to the pretreatment desulfurization agent tank when a water level lower than a predetermined water level is detected by the water level sensor.

~~6.~~ 4. The system according to claim 1, wherein the control panel is connected to an administrator's mobile terminal in a wirelessly communicable manner so that control and monitoring can be remotely preformed through a mobile application.

~~7.~~ 5. The system according to claim 1, wherein the pretreatment desulfurization agent comprises: (a) at least one oxide selected from the group consisting of SiO_2, Al_2O_3, Fe_2O_3, TiO_2, MgO, MnO, CaO, Na_2O, K_2O, and P_2O_3; (b) at least one metal selected from the group consisting of Li, Cr, Co, Ni, Cu, Zn, Ga, Sr, Cd, and Pb; and (c) at least one liquid composition selected from the group consisting of sodium tetraborate ($Na_2B_4O_7.10H_2O$), sodium hydroxide (NaOH), sodium silicate (Na_2SiO_3), and hydrogen peroxide (H_2O_2).

~~8.~~ 6. The system according to claim 5~~1~~, as the oxide comprises 15 to 90 parts by weight of SiO_2, 15 to 100 parts by weight of Al_2O_3, 10 to 50 parts by weight of Fe_2O_3, 5 to 15 parts by weight of TiO_2, 20 to 150 parts by weight of MgO, 10 to 20 parts by weight of MnO, 20 to 200 parts by weight of CaO, 15 to 45 parts by weight of Na_2O, 20 to 50 parts by weight of K_2O, and 5 to 20 parts by weight of P_2O_3, and the metal comprises 0.0035 to 0.009 parts by weight of Li, 0.005 to 0.01 parts by weight of Cr, 0.001 to 0.005 parts by weight of Co, 0.006 to 0.015 parts by weight of Ni, 0.018 to 0.03 parts by weight of Cu, 0.035 to 0.05 parts by weight of Zn, 0.04 to 0.08 parts by weight of Ga, 0.02 to 0.05 parts by weight of Sr, 0.002 to 0.01 parts by weight of Cd and 0.003 to 0.005 parts by weight of Pb.

~~9.~~ 7. The system according to claim 5~~7~~, wherein the oxide and metal have a particle size of 1 to 2 μm and a specific gravity of 2.5 to 3.0

~~10.~~ 8. The system according to claim 5~~7~~, wherein the sodium tetraborate ($Na_2B_4O_7.10H_2O$) is

contained in an amount of 20 to 130 parts by weight, the sodium hydroxide (NaOH) is contained in an amount of 15 to 120 parts by weight, the sodium silicate (Na_2SiO_3) is contained in an amount of 50 to 250 parts by weight, and the hydrogen peroxide (H_2O_2) is contained in an amount of 10 to 50 parts by weight.

~~11.~~ 9. The system according to claim 5~~7~~, wherein in the pretreatment desulfurization agent, the oxide, the metal and the liquid composition form a metal chelate compound.

~~12.~~ 10. The system according to claim 5~~7~~, wherein an effect of adsorbing sulfur oxides (SOx) by the pretreatment desulfurization agent is activated in a temperature range from 400°C to 1200°C.

~~13. The system according to claim 1, wherein the pretreatment desulfurization agent is mixed in an amount of 0.1 to 10 parts by weight with respect 100 parts by weight of marine fuel oil.~~

~~14.~~ 11. The system according to claim 1~~13~~, wherein the pretreatment desulfurization agent is mixed in an amount of 6 parts by weight with respect to 100 parts by weight of marine fuel oil.

~~15.~~ 12. The system according to claim 1, further comprising a line mixer disposed on the fuel supply line, wherein the pretreatment desulfurization agent is injected into marine fuel oil in a state in which the pretreatment desulfurization agent tank is connected to the line mixer.

~~16.~~ 13. The system according to claim 1, wherein the marine fuel oil is heavy oil selected from among bunker-A oil, bunker-B oil, and bunker-C oil or light oil selected

from among MGO, MDO, and DDO.