CLAIMS

1. An inside air control system comprising:

a gas supply device (30) configured to produce low oxygen concentration air having a lower oxygen concentration than outside air as a result of removal of oxygen from the outside air, the gas supply device (30) being capable of supplying the low oxygen concentration air and the outside air into a storage box (11) for storing a breathing plant (15); and

a controller (55) configured to control an operation of the gas supply device (30),

the inside air control system performing an oxygen concentration reduction action to reduce an oxygen concentration of inside air in the storage box (11) to a predetermined set oxygen concentration through the gas supply device (30) supplying the low oxygen concentration air into the storage box (11), and an air composition maintenance action to maintain the inside air at a desired composition after termination of the oxygen concentration reduction action,

during the air composition maintenance action, the controller (55) being configured to instruct the gas supply device (30) to operate while switching among

a first supply operation in which first low oxygen concentration air is supplied into the storage box (11),

a second supply operation in which second low oxygen concentration air having a lower oxygen concentration than the first low oxygen concentration air is supplied into the storage box (11),

an outside air supply operation in which the outside air is supplied into the storage box (11), and

a standby operation in which supply of the first low oxygen concentration air, the second low oxygen concentration air and the outside air into the storage box (11) is maintained at rest,

so that the oxygen concentration of the inside air will be the set oxygen concentration, and a carbon dioxide concentration of the inside air will be a predetermined set carbon dioxide concentration.

2. The device of claim 1, wherein

during the air composition maintenance action, the controller (55)

is configured to selectively switch the operation of the gas supply device (30) from the first supply operation to either the second supply operation or the standby operation so that the oxygen concentration of the inside air decreases, and approaches the set oxygen concentration.

3. The device of claim 1, wherein

during the air composition maintenance action, the controller (55)

is configured to disallow the operation of the gas supply device (30) from being switched from the first supply operation to the standby operation, and to allow the operation of the gas supply device (30) to be switched from the first supply operation to the second supply operation, during a period from satisfaction of a predetermined setting condition to satisfaction of a predetermined clearing condition.

4. The device of claim 3, wherein

the setting condition is a condition that is satisfied if, while the oxygen concentration of the inside air is to be reduced, a degree to which the carbon dioxide concentration of the inside air increases needs to be reduced, and

the clearing condition is a condition that is satisfied if neither the oxygen concentration of the inside air nor the degree to which the carbon dioxide concentration of the inside air increases needs to be reduced.

5. The device of claim 3, wherein

the setting condition is a condition where a state in which the oxygen concentration of the inside air falls within a predetermined oxygen concentration range including the set oxygen concentration and a difference between the carbon dioxide concentration and the set carbon dioxide concentration of the inside air is greater than or equal to a first predetermined value continues for a first predetermined period, and

the clearing condition is a condition where a state in which the oxygen concentration of the inside air is lower than or equal to the set oxygen concentration and the difference between the carbon dioxide concentration and the set carbon dioxide concentration of the inside air is less than or equal to a second predetermined value that is less than the first predetermined value continues for a second predetermined period.

6. The device of any one of claims 1 to 5, wherein

during the air composition maintenance action, the controller (55)

is configured to switch the operation of the gas supply device (30) from the first supply operation, the second supply operation, or the standby operation to the outside air supply operation so that the oxygen concentration of the inside air increases, and approaches the set oxygen concentration.

7. The device of any one of claims 1 to 6, wherein

during the air composition maintenance action, the controller (55)

is configured to switch the operation of the gas supply device (30) from the outside air supply operation to either the first supply operation or the standby operation so that the oxygen concentration of the inside air decreases, and approaches the set oxygen concentration.

8. The device of any one of claims 1 to 7, wherein

during the air composition maintenance action, the controller (55)

is configured to switch the operation of the gas supply device (30) from the standby operation to the first supply operation so that the carbon dioxide concentration of the inside air decreases, and approaches the set carbon dioxide concentration.

9. The device of any one of claims 1 to 8, wherein

the controller (55) is configured to instruct the gas supply device (30) to initially perform the first supply operation during the air composition maintenance action.