Claims

[Claim 1]

An exhaust gas mercury removal system comprising:

a mercury concentration meter that measures a concentration of mercury contained in an exhaust gas discharged from a dust-collecting device that removes dust from the exhaust gas containing the mercury and outputs an output value corresponding to a result of the measurement;

an activated carbon-supplying device that supplies activated carbon to the exhaust gas upstream of the dust-collecting device; and

a control device that controls the activated carbon-supplying device based on the output value,

wherein the control device controls the activated carbon-supplying device to: in a case where the output value is less than a first threshold value, supply a predetermined amount of the activated carbon in an intermittent manner;

in a case where the output value is more than or equal to the first threshold value, and a rate of increase of the output value is less than a first rate of increase, supply a first supply amount of the activated carbon, the first supply amount being larger than the predetermined amount, and in a case where the rate of increase of the output value becomes more than or equal to zero after supplying first supply amount of the activated carbon, supply a second supply amount of the activated carbon, the second supply amount being larger than the first supply amount;

in a case where the output value is more than or equal to the first threshold value, and the rate of increase of the output value is more than or equal to the first rate of increase and is less than a second rate of increase, supply the second supply amount of the activated carbon; and

in a case where the rate of increase of the output value is less than zero after supplying the first supply amount or the second supply amount of the activated carbon, maintain a supply amount of the activated carbon at that point in time until the output value becomes less than a second threshold value that is larger than the first threshold value, and when the output value becomes less than the second threshold value, reduce the supply amount of the activated carbon at that point in time, and when the output value becomes less than a third threshold value that is smaller than the first threshold value, supply the predetermined amount of the activated carbon in the intermittent manner.

[Claim 2]

The exhaust gas mercury removal system according to claim 1, wherein the result of the measurement is a concentration of the mercury at a point in time when the measurement is performed.

[Claim 3]

The exhaust gas mercury removal system according to claim 1 or 2, wherein the activated carbon is halogen-impregnated activated carbon.

[Claim 4]

The exhaust gas mercury removal system according to any one of claims 1 to 3, further comprising:

a waste incinerator; and

a temperature reduction column disposed downstream of the waste incinerator and upstream of the dust-collecting device,

wherein the dust-collecting device is a bag filter, the exhaust gas is discharged from the waste incinerator, and in a case where the output value is more than or equal to the first threshold value, the control device controls the temperature reduction column to decrease a temperature of the exhaust gas.

[Claim 5]

The exhaust gas mercury removal system according to claim 4, further comprising a fly ash-circulating device that transports fly ash discharged from the bag filter to an upstream side of the bag filter and a downstream side of the temperature reduction column so as to supply the fly ash toward the exhaust gas.

[Claim 6]

An exhaust gas mercury removal system comprising:

a mercury concentration meter that measures a concentration of mercury contained in an exhaust gas discharged from a dust-collecting device that removes dust from the exhaust gas containing the mercury and outputs an output value corresponding to a result of the measurement;

an activated carbon-supplying device that supplies activated carbon to the exhaust gas upstream of the dust-collecting device; and

a control device that controls the activated carbon-supplying device based on the output value,

wherein the control device controls the activated carbon-supplying device to:

in a case where the output value is less than a first threshold value, supply a predetermined amount of the activated carbon;

in a case where the output value is more than or equal to the first threshold value, and a rate of increase of the output value is less than a first rate of increase, supply a first supply amount of the activated carbon, the first supply amount being larger than the predetermined amount, and in a case where the rate of increase of the output value becomes more than or equal to zero after supplying first supply amount of the activated carbon, supply a second supply amount of the activated carbon, the second supply amount being larger than the first supply amount, and in a case where the rate of increase of the output value becomes more than or equal to zero after supplying second supply amount of the activated carbon, supply a third supply amount of the activated carbon, the third supply amount being larger than the second supply amount;

in a case where the output value is more than or equal to the first threshold value, and the rate of increase of the output value is more than or equal to the first rate of increase and is less than a second rate of increase, supply the second supply amount of the activated carbon;

in a case where the output value is more than or equal to the first threshold value, and the rate of increase of the output value is more than or equal to the second rate of increase and is less than a third rate of increase, supply the third supply amount of the activated carbon; and

in a case where the rate of increase of the output value is less than zero after supplying the first supply amount, the second supply amount or the third supply amount of the activated carbon, maintain a supply amount of the activated carbon at that point in time until the output value becomes less than a second threshold value that is larger than the first threshold value, and when the output value becomes less than the second threshold value, reduce the supply amount of the activated carbon at that point in time, and when the output value becomes less than a third threshold value that is smaller than the first threshold value, supply the predetermined amount of the activated carbon.