CLAIMS

[Claim 1] An exhaust gas treatment apparatus, comprising:

a first reduction catalyst, disposed in a flow path of combustion exhaust gas of a fuel, for promoting reduction reaction of a specific substance contained in the combustion exhaust gas;

a reductant supply part for supplying a reductant for reducing the specific substance in the combustion exhaust gas, the reductant supply part being disposed upstream of the first reduction catalyst;

a reductant decreasing catalyst for decreasing the reductant in the combustion exhaust gas, the reductant decreasing catalyst being disposed downstream of the first reduction catalyst in the flow path;

at least one second reduction catalyst for promoting reduction reaction of the specific substance, the at least one second reduction catalyst being disposed downstream of the reductant decreasing catalyst in the flow path;

a first concentration measuring part for measuring a first concentration which is a concentration of the specific substance in the combustion exhaust gas in the flow path at a position downstream of the first reduction catalyst and upstream of the reductant decreasing catalyst;

a second concentration measuring part for measuring a second concentration which is a concentration of the specific substance in the combustion exhaust gas in the flow path at a position downstream of the reductant decreasing catalyst; and

a decision part configured to decide whether to increase or decrease a supply amount of the reductant from the reductant supply part, on the basis of the first concentration and the second concentration of the specific substance.

[Claim 2] The exhaust gas treatment apparatus according to claim 1, comprising:

a third concentration measuring part for measuring a third concentration which is a concentration of the specific substance in the combustion exhaust gas in the flow path at a

position downstream of the at least one second reduction catalyst; and

a determination part configured to determine whether it is necessary to adjust the supply amount of the reductant from the reductant supply part, on the basis of the third concentration.

[Claim 3] The exhaust gas treatment apparatus according to claim 2,

wherein the third concentration measuring part is disposed downstream of a most downstream second reduction catalyst of the at least one second reduction catalyst in the flow path.

[Claim 4] The exhaust gas treatment apparatus according to claim 2 or 3, comprising a reductant supply amount adjusting part configured to adjust the supply amount of the reductant from the reductant supply part so that the third concentration is within a predetermined range.

[Claim 5] The exhaust gas treatment apparatus according to any one of claims 2 to 4,

wherein the second concentration measuring part is disposed downstream of the at least one second reduction catalyst in the flow path.

[Claim 6] The exhaust gas treatment apparatus according to any one of claims 1 to 5,

wherein the decision part is configured to decide whether to increase or decrease the supply amount of the reductant, on the basis a comparison between the first concentration and the second concentration.

[Claim 7] The exhaust gas treatment apparatus according to claim 6,

wherein the decision part is configured to decide to decrease the supply amount of the reductant when the first concentration is smaller than the second concentration.

[Claim 8] The exhaust gas treatment apparatus according to claim 6 or 7,

wherein the decision part is configured to decide to increase the supply amount of the

reductant when the first concentration is equal to or greater than the second concentration.

[Claim 9] The exhaust gas treatment apparatus according to claim 1,

wherein the second concentration measuring part is disposed downstream of the at least one second reduction catalyst in the flow path,

wherein the exhaust gas treatment apparatus comprises a determination part configured to determine whether it is necessary to adjust the supply amount of the reductant from the reductant supply part, on the basis of the second concentration, and

wherein the decision part is configured to, when the determination part determines that it is necessary to adjust the supply amount of the reductant, decide whether to increase or decrease the supply amount of the reductant from the reductant supply part, on the basis a comparison between the first concentration and a threshold.

[Claim 10] The exhaust gas treatment apparatus according to any one of claims 1 to 9,

wherein the specific substance includes a nitrogen oxide.

[Claim 11] The exhaust gas treatment apparatus according to claim 10,

wherein the reductant includes ammonia or urea.

[Claim 12] A combustion facility, comprising:

a combustion apparatus configured to burn a fuel; and

an exhaust gas treatment apparatus according to any one of claims 1 to 11 configured to treat combustion exhaust gas of the fuel from the combustion apparatus.

[Claim 13] A power generation facility, comprising:

a combustion facility according to claim 12;

a turbine configured to be driven by the combustion exhaust gas from the combustion apparatus or steam produced by using heat of the combustion exhaust gas from the combustion

apparatus; and

a generator configured to be driven by the turbine.

[Claim 14] An exhaust gas treatment method using an exhaust gas treatment apparatus that includes:

a first reduction catalyst, disposed in a flow path of combustion exhaust gas of a fuel, for promoting reduction reaction of a specific substance contained in the combustion exhaust gas;

a reductant supply part for supplying a reductant for reducing the specific substance in the combustion exhaust gas, the reductant supply part being disposed upstream of the first reduction catalyst;

a reductant decreasing catalyst for decreasing the reductant in the combustion exhaust gas, the reductant decreasing catalyst being disposed downstream of the first reduction catalyst in the flow path; and

at least one second reduction catalyst for promoting reduction reaction of the specific substance, the at least one second reduction catalyst being disposed downstream of the reductant decreasing catalyst in the flow path,

the exhaust gas treatment method comprising:

a step of measuring a first concentration which is a concentration of the specific substance in the combustion exhaust gas in the flow path at a position downstream of the first reduction catalyst and upstream of the reductant decreasing catalyst;

a step of measuring a second concentration which is a concentration of the specific substance in the combustion exhaust gas in the flow path at a position downstream of the reductant decreasing catalyst; and

a step of deciding whether to increase or decrease a supply amount of the reductant from the reductant supply part, on the basis of the first concentration and the second concentration of the specific substance.