increased amount of solid components is not preferred because when the solid components are to be buried, for example, an extra storage space becomes necessary in reclaimed land.

Citation List

Patent Document

[0005]

Patent Document 1: Japanese Unexamined Patent Application, Publication No. 2019-070471

Patent Document 2: Japanese Unexamined Patent Application, Publication No. 2017-124348

Patent Document 3: Japanese Unexamined Patent Application, Publication No. 2017-176922

SUMMARY

[0006]

The present disclosure has been made in view of the above circumstances and provides an exhaust gas treatment system and an exhaust gas treatment method that predict the beginning of an increase in acid gas concentration at an early stage based on the change in oxygen gas concentration linked to the change in the acid gas concentration in exhaust gas to add an appropriate amount of treatment agent in a timely manner.

[0007]

(1) In one aspect, the present disclosure includes an exhaust gas treatment system comprising: an exhaust gas treatment unit that treats an exhaust gas; an exhaust gas recovery unit that separates and

removes a solid component from the exhaust gas that has been treated in the exhaust gas treatment unit; a treatment agent storage unit that stores a treatment agent for treating the exhaust gas; a treatment agent addition management unit comprising an exhaust gas analysis unit, wherein the exhaust gas analysis unit is disposed at least at upstream or downstream of the exhaust gas recovery unit and analyzes at least an oxygen gas concentration in the exhaust gas, and wherein the treatment agent addition management unit calculates an amount of the treatment agent to be added necessary to treat an acid gas in the exhaust gas treated in the exhaust gas treatment unit based on an amount of change in the oxygen gas concentration analyzed in the exhaust gas analysis unit, and the treatment agent addition management unit gives an instruction to supply the calculated amount of the treatment agent; and a treatment agent supply unit that supplies the treatment agent in an amount instructed by the treatment agent addition management unit from the treatment agent storage unit to the exhaust gas treatment unit.

(2) In one example, the exhaust gas treatment system according to (1), wherein the exhaust gas analysis unit is disposed at downstream of the exhaust gas recovery unit.

(3) In one example, the exhaust gas treatment system according to (1) or (2), wherein the treatment agent has a property of neutralizing an acid gas in the exhaust gas.

(4) In one example, the exhaust gas treatment system according to any of (1) to (3), wherein the acid gas is a sulfur oxide gas.

(5) In another aspect, the present disclosure includes an exhaust gas treatment method comprising: calculating an amount of a treatment agent to be added necessary to treat an acid gas in an exhaust gas treated

in an exhaust gas treatment unit, based on an amount of change in an oxygen gas concentration analyzed in an exhaust gas analysis unit in a treatment agent addition management unit, wherein the exhaust gas analysis unit is disposed at least at upstream or downstream of an exhaust gas recovery unit that separates gas from a solid component in the exhaust gas to recover and remove the solid component, and analyzes at least the oxygen gas concentration in the exhaust gas; giving an instruction to a treatment agent supply unit to supply the calculated

amount of the treatment agent; and supplying the instructed amount of the treatment agent from a treatment agent storage unit to the exhaust gas treatment unit, to thereby treat the acid gas in the exhaust gas.

Effects of the Invention

[0008]

The exhaust gas treatment system and the exhaust gas treatment method of the present disclosure can keep the concentration of sulfur oxide in exhaust gas discharged to the atmosphere low in a stable manner without a sudden increase, and also can reduce the amount of unreacted treatment agent in the solid component separated and removed in the exhaust gas recovery unit.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a view illustrating a structure of an exhaust gas treatment system for performing the exhaust gas treatment method of the present invention;

Fig. 2 is a graph showing the change in SO_2 concentration, O_2 concentration and the amount of slaked lime introduced when a treatment agent is added thereto based on the results of analysis of SO_2 concentration in exhaust gas; and

Fig. 3 is a graph showing the change in SO_2 concentration, O_2 concentration and the amount of slaked lime introduced when a treatment agent is added thereto based on the results of analysis of O_2 concentration in exhaust gas.

PREFERRED MODE FOR CARRYING OUT THE INVENTION

[0010]

Hereinafter, embodiments of the present invention will be described. The following description is an example of embodiments of the present invention, and does not limit the claims.

[0011]