

ABSTRACT

Method and System for Removing Gas Components from a Flue Gas

The invention relates to a method for removing gas components SO_x , NO_x , and CO_2 from a flue gas, comprising the steps of: a) contacting the flue gas with a first liquid medium which provides a first plasma containing reactive electrons or ions in an amount such that the gas molecules SO_x are subject to impingement of the electrons or ions in the first plasma to enable the dissociation of the gas molecules SO_x so as to remove SO_x from the flue gas; b) contacting the flue gas obtained from step a) with a second liquid medium which provides a second plasma containing reactive electrons or ions in an amount such that the gas molecules CO_2 are subject to impingement of the electrons or ions in the second plasma to enable the dissociation of the gas molecules CO_2 so as to remove CO_2 from the flue gas; and c) contacting the flue gas obtained from step b) with a third liquid medium which provides a third plasma containing reactive electrons or ions in an amount such that the gas molecules NO_x are subject to impingement of the electrons or ions in the second plasma to enable the dissociation of the gas molecules NO_x so as to remove NO_x from the flue gas. The invention also relates to a system for removing gas components SO_x , NO_x , and CO_2 from a flue gas. The method and the system of the invention significantly reduce the capital cost and require very low energy, with the environmentally friendly final products. In addition, the tower of the invention can be constructed in a very compact manner.

FIGURE 1