Title (en)

Method for operating a thermal regenerative exhaust gas purification system

Title (de)

Verfahren zum Betreiben einer thermisch-regenerativen Abluftreinigungsanlage

Title (fr)

Procédé de fonctionnement d'une installation de purification de gaz d'échappement par régénération

Publication

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Application

EP 07017365 A 20070905

Priority

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- DE 102007032952 A 20070714

Abstract (en)

The method for operating a thermally regenerative exhaust air purification plant (1), in which the exhaust air loaded with volatile hydrocarbons for heating is conducted by a ceramic heat exchanger (2) and finally by a furnace chamber (6) provided with a burner (7), comprises determining the heat exchanger temperature in the heat exchanger, determining the furnace chamber temperature in the furnace chamber, adjusting the burner operational mode in depending upon the exchanger temperature and the furnace chamber temperature. The method for operating a thermally regenerative exhaust air purification plant (1), in which the exhaust air loaded with volatile hydrocarbons for heating is conducted by a ceramic heat exchanger (2) and finally by a furnace chamber (6) provided with a burner (7), comprises determining the heat exchanger temperature in the heat exchanger, determining the furnace chamber temperature in the furnace chamber, adjusting the burner operational mode in depending upon the exchanger temperature and the furnace chamber temperature. The burner has normal operation with continuous, stoichiometric flame, injection operation with alternately non stoichiometric flame, and autothermic operation without flame. Gas is used as fuel. The normal operation takes place by fuel supply when the exchanger temperature is less than 750[deg] C and the furnace temperature is greater than 650[deg] C or when the exchanger temperature is greater than 750[deg] C and the furnace chamber temperature is less than 800[deg] C. The injection operation takes place by intermittently occurring supply of fuel with air on one hand and intermittently occurring supply of only fuel on other hand when the exchanger temperature is less than 750[deg] C and the furnace chamber temperature is greater than 800[deg] C or when the exchanger temperature is greater than 800[deg] C and the furnace chamber temperature is greater than 750[deg] C. The autothermic operation takes place by switching off the fuel supply when the exchanger temperature is less than 750[deg] C and the furnace chamber temperature is greater than 820[deg] C or when the exchanger temperature is greater than 820[deg] C and the furnace chamber temperature is greater than 750[deg] C. A sub-autothermic operation takes place in a fourth temperature range of the exchanger and the furnace chamber. The fourth temperature range lies above the temperature range of the autothermic operation. The temperature of the exchanger and/or the furnace chamber increases in the burner despite switched off the sub-autothermic operation, as long as no opposite measures are applied. The exhaust air or a part of it from the furnace chamber is outwardly diverted in the sub-autothermic operation for stopping or limiting the temperature rise in the exchanger and/or in the furnace chamber, without that the exchanger or an area/bed is heated by this exhaust air/part of the exhaust air. The diversion takes place by a bypass, which conducts in the environment/outer atmosphere by the furnace chamber. The diverted volume flow of the exhaust air flowed through the bypass is movable or adjustable by a final controlling equipment/closure device. The exchanger has beds (3, 4, 5), which are alternately operated in the operational mode of raw gas-, clean gas- and rinsing operation. The bed temperature is determined in each of the beds, which are differently operated in depending upon the respective bed temperature of the beds, so that the temperature differences of the bed temperatures are possibly reduced to zero. The different operations are carried out by using different operational modes. The operation of the purification plant takes place in depending upon a reaction temperature in a predetermined temperature range. The furnace chamber temperature and the bed temperature are considered in the reaction temperature. The raw gas-, clean gas- or rinsing operation is existed in the cycle time of the clean gas operation, which is lengthened in the sub-autothermic operation for stopping or limiting a temperature rise in the exchanger and/or in the furnace chamber, so that it increases the temperature of the exhaust air discharged at the environment/atmosphere.

Abstract (de)

Die Erfindung betrifft ein Verfahren zum Betreiben einer thermischregenerativen Abluftreinigungsanlage, bei der mit flüchtigen Kohlenwasserstoffen belastete Abluft zum Aufheizen durch einen Wärmetauscher, insbesondere keramischen Wärmetauscher, und anschließend eine mit Brenner versehene Brennkammer geleitet wird, mit folgend Schritten: - Ermitteln der Wärmetauschertemperatur im Wärmetauscher, - Ermitteln der Brennkammertemperatur in der Brennkammer und - Einstellen der Brennerbetriebsweise in Abhängigkeit von der Wärmetauschertemperatur und der Brennkammertemperatur. Insbesondere erfolgt ein Einstellen eines Bereichs der Reaktionstemperatur innerhalb der Anlage in Abhängigkeit von der Wärmetauschertemperatur und der Brennkammertemperatur.

IPC 8 full level

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CPC (source: EP)

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Citation (applicant)

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