

Title (en)

HIGH EFFICIENCY WASTE TO ENERGY POWER PLANTS COMBINING MUNICIPAL SOLID WASTE AND NATURAL GAS

Title (de)

HOCHLEISTUNGS-WTE-KRAFTWERKE (WTE-WASTE TO ENERGY) UNTER KOMBINATION VON FESTEM HAUSMÜLL UND ERDGAS

Title (fr)

DÉCHET HAUT RENDEMENT POUR CENTRALES ÉLECTRIQUES COMBINANT DES DÉCHETS SOLIDES MUNICIPAUX ET DU GAZ NATUREL

Publication

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Application

EP 08878195 A 20081124

Priority

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Abstract (en)

[origin: WO2010057279A1] Corrosion is avoided by using an external superheater heated by the clean gas exhaust coming from the internal combustion machine (ICM) mixed with pure air, with duct firing to adjust the steam superheating temperature, in the same way the existing natural gas/waste power plant do. The difference in the proposed patent is that the ICM is chosen not to match the steam amount produced in the waste boiler, which is superheated to a corrosion safe temperature say 400 C or less, but just to provide the plant own power consumption. We need to increase this ICM exhaust flow with pure air and use duct firing (11,12) to raise the gas mixture temperature, say between 600 C and 700 C, high enough to superheat the steam in the external superheater (3) to approximately 500 C. If we use pure air at ambient temperature, the amount of natural gas in the duct burners (11,12) will be very high decreasing the natural gas efficiency. To reduce the natural gas consumption in the duct burner (11,12) we use the hot gas leaving the external superheater (3), around 420 C, to preheat the ambient air to say 390 C, in a air/gas heat exchanger (13), before it is mixed with the ICM exhaust, increasing the mixture temperature to a value close to 400 C, reducing drastically the natural gas consumption in the duct firing (11,12).

IPC 8 full level

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Citation (search report)

- [AD] US 5724807 A 19980310 - SCHUETZENDUEBEL WOLFRAM G [US], et al
- [A] JP H07243305 A 19950919 - KUBOTA KK
- [A] JP 2005090901 A 20050407 - KAWASAKI HEAVY IND LTD
- [A] US 2004011057 A1 20040122 - HUBER DAVE J [US]
- See references of WO 2010057279A1

Cited by

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