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NEW PATENTS

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4917024

COAL FIRED POWER PLANT WITH POLLUTION CONTROL AND USEFUL BYPRODUCTS

Jerome H Marten, G Michael Lloyd assigned to Florida Institute of Phosphate Research

A coal fired power plant includes a coal gasification zone where coal is gasified in the presence of an oxidant-lean atmosphere under partial coal gasifying conditions to produce a carbonaceous char and a crude gas stream, an acid separating zone where sulfur-containing compounds are separated from the crude gas stream to produce a combustible gas stream, and a converting zone where the sulfur-containing compounds are converted to elemental sulfur. The combustible gas stream and the carbonaceous char are fed into a boiler which drives a generator to produce electricity; portions of the carbonaceous char product and the combustible gas stream are diverted into a gypsum desulfurization zone. SO2-containing flue gas from the boiler is fed into a flue gas desulfurization zone. There, the SO2-containing flue gas is contacted with lime and limestone to produce gypsum. The gypsum is fed to the gypsum desulfurization zone where it is heated with the diverted carbonaceous char under reducing conditions utilizing the diverted combustible gas stream to provide energy to produce a SO2-containing gas stream. The SO2-containing gas stream is recycled back to the coal gasification zone to provide at least a portion of the oxidant-lean atmosphere air used in the coal gasification zone.

4918915

METHOD FOR CLEAN INCINERATION OF WASTES

William C Pfefferle

The present invention provides a method for the destruction of hazardous carbonaceous wastes comprising solids which comprises the steps of (a) gasifying said wastes and producing an intimate admixture of the gaseous products of said gasification with air, said admixture containing at least a stoichiometric amount of air, (b) passing said admixture to a plug flow combustion zone, and (c) effecting sustained and essentially complete combustion of said admixture under essentially adiabatic conditions to destroy said gaseous products and to form a combustion effluent of high thermal energy; said combustion being characterized by said admixture having an adiabatic flame temperature such that that actual flame temperature in the combustion zone is greater than about 1350 K.