

The existing problems of MSW incineration power generation

and new technology development

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Abstract: Garbage Incineration is one of the most important ways to deal with waste effectively at home and abroad, But garbage is burned directly to the environment creates harm. convert an unclassified urban living garbage to a high calorific value renewable energy fuel, and build incineration efficient power generation demonstration production works, forming clean electrical Energy, flue gas purification makes two of dioxin emissions better than national standards and EU standard limits requires, its output per ton of garbage reaches about 1100KW.H, is a domestic incineration power plant 2~3 Times, Implement the real garbage, harmless, 'Resource, 'benefit, 'Industrialization, 'Use purpose.

Keywords: Living Garbage; burning Problems; Garbage reclaimed fuel; New technologies for garbage generation

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Introduction

with the growing population of the city, and environmental pollution, traffic congestions same, The yearly increase of domestic garbage has become the main City Sickness one. Chinese urban life trash with annual about 1.6 billion-ton speed [1] increase length, and the amount of garbage accumulated throughout the year has reached \$multi-ton, junk Landfill covers approximately occupy 5 billion sq. m land resource, and Soil ring Border, surface water Environment, Groundwater Environment, Atmospheric environment and eco-Environment bring great pollution impact, national? Many cities have 2/3 city trapped in garbage. Garbage is nowhere to be poured, Trans-regional Trans-province The news for the garbage is frequently found in the newspaper. "garbage Siege" is affected scope more wide, more severe, deeper than, More persistent environmental pollution, Impact alarmed heart, has become a great environmental hazard, need to accelerate research resolution. and construction land for sanitary landfills primarily handling domestic waste is being consumed exhausted, garbage incineration and power generation [2~4] has become the current domestic and foreign garbage disposal

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Decrement, Harmless, Resource The most important way to.

1. Technical and incineration methods for MSW incineration

1.1 main technology for garbage incineration

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is currently, The main technology for garbage burning is 3 Large class: Layered Combustion

technology, fluidized bed combustion technology and rotational combustion technology, with corresponding incinerator as Mechanical furnace Grate, fluidized bed furnace and rotary kiln type furnace [5]. where, mechanical furnace Exhaust furnace and fluidized bed incinerator are the most widely used incinerators at present; rotary kiln type incinerator is not suitable for calorific value lower than 5000 KJ/kg, High water content Garbage burning. The pyrolysis method is in the restore atmosphere, to break the garbage hot to about 1500 kcal/kg medium calorific value gas (H₂, CH₄, Carbide), Pass over 1000°C The burning furnace of the is then converted into thermal or electrical energy, The technical mesh The is still in development research before.

1.2 main incineration methods for garbage

is currently, in garbage incineration at home and abroad, is mainly in the form of a straight Burn and pyrolysis gasification two kinds of [5]. garbage burning also called single paragraph burn. due to high water content in domestic waste, Low calorific value, in garbage incineration

before, typically requires dehydration and relative dryness of the garbage, which is often The uses a heap ferment and preheating baking dry. pyrolysis gasification combustion is performed in the absence of oxygen conditions, Complete the evaporation of the garbage. pyrolysis gasification combustion anti-should, produce a large number of carbons, CO with hydrocarbon gas, through two segment combustion.

2. major problems with current garbage incineration technologies

2.1 major technical problems with garbage incineration

the domestic garbage component of our country is complex, where the kitchen garbage is up to 50%~60%, thus high moisture content (is generally 40%~60%), Garbage The calorific value of the garbage is very low, Such mixed trash ingredients complex, not for straight Burn, The flue gas emissions after incineration are also difficult to control. and currently our country Trash incineration (power generation) handling is primarily a direct incineration method. on our country's main application of garbage incineration methods and technologies, to the without or simply ferment dehydrated garbage, in grate furnace and rotary kiln Burn procedure, It is not easy to disperse because of heavy garbage and large volume; on fluidized bed Furnace, because the garbage size is not uniform, affects fluidization boiling. so, Garbage is not easy to burn in all kinds of incineration, furnace temperature low, cause flue gas, Ash especially of the two. The amount of poisonous gas produced large, Subsequent flue gas purification processes and devices complex, difficult to meet emissions, Save in serious two pollution environmental hazards. current, in garbage incineration The Main method of traditional production process is to add a person to the right amount of low calorific value of pulverized coal or "heavy fuel combustion" [6]. Recent development of pyrolysis gasification incineration technology, also presence of thermal energy in anaerobic pyrolysis, incineration residue high thermal burn rate, and Because of the complex composition of the waste, the complex carbide composition caused in the two combustion chamber Fire burning Bad effect.

2.2 environmental problems with garbage incineration

in the garbage incineration is more concerned about two of the smoke in the well-British pollution. Construction and operation of many incineration power plants in China, On the local has raised a lot of social problems [7~10]. More serious is, Some provinces rashly implement pilot projects in rural areas construction of indigenous kiln incinerator for living garbage disperse Disposal mode of heap retting incineration, burn with black smoke, Low temperature retting to make the two well-British production is doubled, causing serious two pollution, to ring environment is extremely harmful. This kind of garbage "Direct heap to burn" and caused by Environmental hazards have also been hotly criticized by the community.

3. new technologies for efficient incineration of domestic waste power generation

3.1 domestic waste pretreatment made of environmentally-friendly renewable energy fuels

According to the high water content of domestic waste, Low calorific value and harmful components High features, through technology, greatly increase the heat value of the garbage, and research System-compatible dedicated incinerator, has become our domestic garbage incineration send Important topics for research and

development in the electrical industry. Some enterprises in China Force on the development of municipal solid waste renewable fuels and the opening of combined power generation technology send, living waste through squeeze dehydration, cut break, Dry, Add special Additive, Green Renewable energy fuels made of high calorific value [one]. This garbage environmentally friendly renewable energy fuel high calorific value dry base 16.37 MJ/kg, received the base 15.68 MJ/kg, than the original living garbage calorific value (3.344~6.688 MJ/kg) increase 3~5 Times, fixed carbon and carbon Low, ash, Moderate volatile, sulfur, phosphorus, Chlorine, Arsenic, lead has Bad content, with easy to burn, lit up fast, furnace Firepower strong, no sulfur, no coking, Low-carbon gasification combustion, burns completely and drains less features, is a good renewable energy environmental fuel.

2014 Year, Germany has invented a so-called third-generation garbage disposal [][[]], This is also the first to produce the burning value of domestic waste and the lignite phase when (3500~5000 kcal/kg) Alternative fuel. This technique is only a small fraction of the high calorific value of combustible garbage in the with, technology relatively simple, does not apply to our country without sorting the garbage. Garbage processing and use of "Garbage Environmental Renewable new energy fuel" plus Technology with Germany called "third generation garbage disposal technology" Production, "Green coal Technology compared to, has garbage without manual sorting and sorting class can all be converted to high calorific value derived fuel, more suitable for our country rubbish Harmless resource utilization.

3.2 live waste incineration efficient power generation

uses deep processing to create environmentally friendly renewable energy fuels, Matching Mechanical Grate furnace and boiler steam generator set, forming garbage environmental regeneration new Energy efficient power generation ultimate deal City living Garbage "harmless" "resource" Low Cost "Industrialization One-stop matching production process technology (process flow See the following figure), and have been built to deal with living garbage it/ @ [] [* *] for Eco-friendly renewable energy efficient power generation industrial demonstration production base. entire production process controlled by full automatic control, by approximately minute process, No need to add coal, fuel combustion with oil, is about to be processed by garbage, Burn Burn to generate electricity to form a clean power source. the project per ton of living garbage can be born product 0.56 t regenerated New energy fuel, Incineration can generate electricity about 1100 kW-H, send power higher than current Beijing, Wuhan, Guangzhou and other land built large garbage garbage incineration power plant [8~Ten] 2~3 Times.

3.3 waste incineration flue gas treatment purification process

The composition of the flue gas emitted from waste-to-energy incineration projects is mainly two, English-like substances (pcdds\pcdfs), acid gas (HCl, HF, sox), NOx, particulate matter, Organic and heavy metals, must go to line decontamination, reach Standard for pollution control of domestic waste incineration (GB18485-2014). flue gas purification process for the demonstration project after the Comprehensive research improvements, The takes a Semi-dry reaction tower + Activated carbon adsorption tower + Low pressure cyclone bag filter [@,] + Venturi vaporization Cooling water film washing Duster + materialized union deep Water wash (closed negative pressure) Pool (cans) Smoke Gas Comprehensive purification process.

The project is in the process of using the, Special improvements with: 1) catalysis oxidation reaction tower, Select a easy, non-toxic with good effect, Odor-free catalytic oxidant, through the bottom of the reaction Tower inlet and flue gas are fully mixed to connect contact, Highly efficient removal of dioxin and furan toxic substances in flue gas ['] (>90%) and chloride in flue gas, sulfides and NOx quality. 2) set materialized union deep-water sink or cylindrical tank (closed Negative Press), using pressure to induce flue gas through materialization combined with deep water washing (closed negative pressure), The high temperature flue gas is also cooled rapidly, To avoid the two-well two-time compositing, significantly remove residual soot harmful substances, implement cryogenic gas max degree of purification discharge. 3) in the above reaction tower and wash pool (jar) set up a materialized reaction tower, built-in ozone generator, prompting ex-worker preamble The water

vapor and ozone occurrence of the water film dedusting device with the evaporation temperature, break down, effectively remove all kinds of germs, virus, odor and toxic gases from the body, to further purify flue gas emissions.

to the authoritative department on the flue gas purification for environmentally-friendly renewable coal projects. The appliance run exhaust emissions from burning process, residue has been detected multiple times. The project's flue gas purification device runs stably and controls, all indicators up to national phase-off standard. The total toxicity equivalent of two dioxin was 0.017~0.032 Ngteq/m³, flue gas indicators are up to or better than the national domestic waste incineration pollution control standard (GB 18485-2014) and European Union waste incineration pollutant row place standard (directive-2000) limit, ensures garbage incineration efficient power generation demonstration project environmental protection run.

4. Epilogue

Many large and medium sized garbage incineration plants in the country, is mostly the importing country outside advanced incinerator, all direct incineration of domestic waste to power generation. But domestic waste in industrialized countries is classified and has a high fever value, good effect. And our country's domestic garbage no classification management, with water rate high fever low, part of the garbage incineration power plant must also rely on Tim. Add a sizable amount of coal or heavy oil to combustion to make sure the garbage is incinerated, low power generation, high operating costs, and also causes smoke to have harmful to the gas and other two of pollution is difficult to control and affect normal operation.

Live garbage in the absence of classification, through a series of extrusion dehydration, magnetic selection, cut break, dry and core technology special additive odor sterilization and heat treatment, convert garbage to environmental protection and new energy fuel, make the calorific value of the garbage greatly increased and the harmful ingredient to reduce or suppress, and build a complete set of combustion power generation demonstration project. On "junk green regeneration" incineration during power generation, no need to add coal, oil, fuel combustion, burning temperature up 1000°C above, burn total pollution less, two well, British-like emissions are superior to national environmental protection standards limit requirements. per ton of domestic waste generating capacity 1100 kW·h, domestic waste incineration power plant waste incineration output 2~3 times, implementing real garbage "harmless" "resource" "benefit" "industrialization" The uses. 2016 year one The National four Ministerial committee issued a joint "about further comments on the treatment of municipal solid waste incineration" The presents the, to build neighborhood-friendly high standard clean incineration project, take effective measures, control two times pollution, change neighborhood avoidance effect is neighborhood benefits, implements shared development. domestic waste processing forms environmental regeneration new energy fuel burn again Conversion application of burning power generation technology achievements, to better resolve the garbage "public nuisance" "handling problems, implementing municipal solid waste harmless ultimate treatment straight connect to clean power products, reach with waste treatment, eases government long-term economic burden of garbage control, and solution "garbage siege" "dilemma" purpose, not only can produce huge social benefits, environmental benefits, can also produce greater economic benefits.

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