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Energy efficient use of fuel ethanol plants

--with an annual outputofmillionTThermal Power station selection for cassava fuel ethanol project

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Abstract: with an annual outputofmillionTThermal Power station selection for cassava fuel ethanol project,briefly discusses energy efficient use of factory production.thermoelectricitystationas the core unit of power and steam for the wholeplant,Its selection will have a direct bearing on the energy utilization level of the plant.,Science,A reasonable selection of thermal power stations can beto maximize economic benefits.Thecomparisonto3,,make fuel ethanol thermal power station type determinationbased on science,reliable based on,BenefitsEnergy Efficient use of fuel ethanol plants.
Keywords: fuel ethanol,Cassava,Thermal Power station,Save Energyand reduce consumption

The fuel ethanol industry is an important component of China's oil substitution strategy,Its development for the benefit of our country"Energy-Reducing emissions",Transform economic growth model, "Improving energy consumption structureImplementation of overall goals such as.whenbefore,China as the largest in the world,fastestgrowing economybody,is one of the fastestgrowing countries in global energy consumption,andAt the same time, national energy security uncertainties areincreasing.nearly 10years,Total energy consumption and oil consumption per year, respectively5. 8%and7.4%,is the world's fastest-growing2. 6times and4. 6Times.Other according to customs statistics,2008year China oil(including originaloil,Refined oil,LPG and other petroleum products)Net importsup067milliont,yeargrowth9 5%,net imports for domestic oilThe ratio of to consumption is closeto52%.on theother hand,due to fossil canLarge consumption of sources,China$C0_2$emissions are in world page2forposition,methane,greenhouse gas emissions such as nitrous oxide are also in the worldForefront.Consider the above dilemma,fuel ethanol with alternative oil,Improve environment,Driving regional economy and other comprehensive benefits,is becoming meState-driven clean renewable energy.

Scientific increase in energy use level,helps promote fuel ethanol productionIndustry Sustainable Development.according to energy conservation and Technology of National Energy BureauNostatistics,2008Year Our overall energy efficiency is about33%,isabout lower than developed countries10.This also meansthat,consumes the sameQuantity Energy,Our country produces significantly lower economic benefits than developed countriesThehome.based on,My country is2006Year formally proposed"Eleven-Five"periodimplementationGDPPowerdown%Overall goal.on such a large backviewcombined with fuel ethanol industry features,Effective Energy Utilizationlevel,will undoubtedly reduce the economic cost and environment of industrial developmentthis,Further enhance the comprehensive benefits of energy saving and emission reduction,Enhanced oil substitution

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Draft date: 2009-01-08,change back to date: 2009-03-09Benefits.article with annual outputFuel Ethanol Thermal Power station selection forexample,briefly discuss energy efficient use in factory production.

1. Overview of energy supply and consumption

1.1 Introduction to fuel ethanol production process

This project produces a yearly output of cassava as a raw materialmillionTFuel EthanolFactory,,themain processes used by the sections in production include:Cassava medium temperatureCooking Process,two times liquefaction process,Two-enzyme continuous liquefaction saccharification process(Select high-temperature amylase),continuous fermentation process,combined Tri-tower differential pressuredistillation process and molecular sieve dehydration process.

1.2 Energy consumption

AllPlant energy consumption is mainly steam and power2Section.steamingsteam(1.0MPaSaturated Steam,Same as)consumption scheme per hourIand Scenarios115%. 8T/H,SchemeIIis,T/H;Each small of powerThe is consumed when the chillers are onand7-KW•hon coldWater Unit shutdown condition is5 850KW.H.Sewage treatment withfull tank anaerobic process,Biogasoutput all. 0XI0^4-. 0X$^4Nm^3$/D,This article takesthe.5Xten$^4Nm^3$/D.

Energy supply

TheEnergy source for this project is biogas and coal,Biogas by methane contentfor55%,calorificvalue is2. 186Xten^{4}kJ/Nm^{3}count;coal lowcalorificvalue5935Xten^{3}kJ/kgMeter.

2. Introduction to Thermal power schemes

2.1 Thermal Power station as the core unit of the plant's self-production power and steam,itsTheselection will directly relate to the entire plant's energy use level.Science,reasonablethe Thermal Power station selection scheme for will be available to ensure full plant energy supplywhile,Lower run cost,Maximize economic benefits.Reference this entryPurpose design and energy requirements,The selection of the thermal power station mainly has the following

Theoutput of this scenario is controlled by the power consumption ofthe entire plant,Factory power consumption due to different seasons(Open Water chiller can)and nosame raw material Hugh potato or fresh cassavaon5 850-7AllKW•Hbetweenfluctuation.For comparison convenience,undernormal production,Press allpower generation,The principle of residual heat and excess biogas for steam production,power generationmeasure average7$kW-H.

(2)for(Production)Hot:the entire plant is consumed by. 8T/H,The amount of steam produced by the residual heat and excess biogas varies by power generation,in-28T/Hfluctuate between,is convenient for selection,averagest/h.Select with complementburnt/hHeat boiler1Set.

Factory Steam is still availablein. 8T/HGap,by a low-pressure coal-fired boilersupply,This option2TableT/HLow-pressure coal-fired chain furnace,PotFurnace Thermal efficiency78%.When the biogas is not available,,start2Taiwan coal burner,steam up to meet91%production load,Coal consumption is6. 0t/H,The power required is supplied by the extranet.outsourced power approximatelyX 10^{4}KW.H/a.When biogas is normally supplied,start1Taiwan coal burner,other1Taiwan coal fired furnace available as standby,coal consumption3. 0t/H,Annual coal consumptionamount to aboutT.

2.2 SchemeII

based on as much power as possible,reduce purchasing power and increase boiler heatEfficiency Considerations,using biogas and coal double fuel circulating fluidized bed boiler2Table,Boiler Rated Steam pressure is3.MPa,rated evaporationT/H,Boiler Thermal efficiency take85.configuration6MWcondensingsteam wheel HairMotor Group1set.steam turbine suction pressure as required for production0MPa,Extraction. 0T/H,Theamount of steam out after the thermostat is44.0T/H,to meet your entire factory's steam needs.boiler out steamt//h,power generationUnit power generation6kW.H.Its simple process is as follows:

when biogas is in normal supply,coal consumption is5.T/H,No methane supplywhen,coal consumption toTen.at/H,Annual coal consumptionT.This scenario needsto be outsourcedPower about900X^4(kW[])•H)/a.

2.3 SchemeIII

The uses a steam-and-electricity scheme,Known factory consumption is. 8t/h(0.)MPa),use biogas and coal combustion chain furnace3table,potfurnace rated steam pressure3.MaxMPa,rated evaporationit/H,at birthPlant full load working status,start2boiler to me*et al*lFactory steam,where1Stand-by.The thermal efficiency of the boiler takes the78%.withset3MWback-pressure turbo-Generator set1set,Steam turbine exhaustpressure is0.[MPa,Powergeneration approximately2 453kW•H,its process likeunder:

Biogas Cabinet_.mi

when biogas is in normal supply,coal consumption is2. 0T/H,No methane supplywhen,coal consumption to7. 0t/H-,Annual coal consumption1. 8Universalt,This scenario is still neededoutsourcing power3 438Xten^{4}kW.H/a.

3. Conclusion

(1)SchemeIIand Scenariosiiiwrun cost is different than schemeIHighThe.A%and.%,Thedifference between year running costs1 812million and999million,equivalent per ton of fuel ethanol operating costdifference. 8andis. 6Meta.

(2)SchemeIIand ScenariosIIToOutsource coal,Theamount of coalto be marked with an analogycaseIhigh87.a%and?. Modified%,separate difference355tsignCoal/aand5450TStandard coal/a.

(3)under normal operating conditions,SchemeIMore OptionsIIand ScenariosIITheconstruction investment of the rot can be in one year andthe the3. 8compensated for year;

(4)when the electricity price of the factory location is higher than the0./kw$·h,,ScenariosThe advantages of I are particularly obvious.

(5)Comprehensive analysis of the above selection,SchemeIobviously better than square CaseIIand ScenariosIIIconforms to high efficiency,Energy Saving,Reduceconsumption,requirements for reducing emissions,shouldThetakesthe.

(6)The determination of the boiler model is affected by a variety of factors,Boilers and steammachine Model OK,Coal consumption in this article,from power generation,Buildindicators such asinvestment,,run cost are slightly changed,but3ScenariosThe order of the does not change..

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