

# 等离子气化技术介绍

## Hydrogen Production by Plasma Gasification

——珠海高栏港经济区 工业和危险废物资源化清洁循环利用工程

——Zhuhai Economic Zone Gaolan Port Project for Industrial and Hazardous waste cleaning recycle to resource

**GUANGDONG PLASMA POWER Co., Ltd.**  
**广东宝莱玛电力有限公司**



# CATALOGUE 目录

1、Profile of GPP 宝莱玛公司简介

2、Advantage of GPP 宝莱玛的优势

3、In hand project 进行中的项目

4、Prospect 前景

5、Business models and technology solutions  
商业模式和技术方案

# 1、 Profile of GPP

宝莱玛公司简介



# Introduction of Guangdong Plasma Power Co., Ltd.

## 宝莱玛公司简介

**Guangdong Plasma Power Co., Ltd. (GPP):** a power project development company of utilization, renewable energy, distributed energy, low-carbon development.

**宝莱玛公司：**综合利用、可再生能源、分布式能源、低碳发展型的电力项目开发企业

**Registered address:** Gaolan Port Economic Zone, Zhuhai

**公司注册地址：**珠海高栏港经济区



# Business Scope / 营业范围

## 1、Licensed Business Project: / 许可经营项目:

Thermal power, hydropower, wind power, other forms of power generation, heat production and supply.

火力发电、水力发电、风力发电、其他形式发电，热力生产和供应。

## 2、General Business Project: / 一般经营项目:

Environmental management, renewable energy, distributed energy project development, resource utilization, project management services, technology promotion and application services, wholesale and export of chemical products (excluding Licensing Business), environmental protection equipment manufacturing, furnace manufacturing, fuel cell manufacturers, other prime mover equipment manufacturing, power generation equipment, electrical equipment, machinery and equipment, metal products wholesale, import and export of goods, electronic products, auto parts wholesale, import and export of goods. Import and export of new energy technologies.

环境治理，可再生能源、分布式能源项目开发，资源综合利用，工程管理服务，科技推广和应用服务，化工产品批发和进出口（不含许可经营项目），环境保护专用设备制造、熔炉制造，燃料电池制造，其他原动设备制造，发电设备、电气设备、机械设备、五金产品货物批发和进出口，电子产品、汽车零配件货物批发和进出口。新能源技术进出口。

# Brief Introduction of Guangdong Plasma Power Co., Ltd.

## 宝莱玛公司概述

□Guangdong Plasma Power Co., Ltd. (GPP) is a company of project development, construction and operation.

广东宝莱玛电力有限公司(简称GPP)是一个项目开发，工程建设和项目运营的公司。

□Fossil fuels and a variety of solid waste are converted into electricity or other available products by plasma gasification energy system.

以等离子气化能源系统，将化石燃料和各种固体废弃物转换成电力和其他可用产品。

□The conversion rate is high, and there is almost no atmospheric emissions and solid contaminants.

转化率高，几乎没有排放任何类型的大气和固体污染物。

□Plasma gasification energy systems provides a real environmentally friendly and sustainable solutions for disposal of all types of waste and gasification power generation of waste hazard, petroleum coke, oil shale, biomass, coal and other low-quality hydrocarbon fuels.

等离子气化能源系统为危险废弃物、石油焦、油页岩、生物质、煤矸石等低质碳氢燃料的气化发电和所有类型垃圾的处置提供了一个真正的环保和可持续解决方案。

## OUR GOAL / 我们的目标

◆ Our goal——make full use of resources , for better life of human kind.  
我们的目标是——完全充分利用资源，为人类生活更美丽。



## 2、 Advantage of GPP

宝莱玛的优势





## Advantages of GPP/ 宝莱玛的优势：

1、与西屋等离子公司  
良好的合作关系  
Good relationship and  
strategic cooperation  
with Alter NRG

2、专业的专家和顾问  
Professional experts  
and consultants as  
technology support

3、熟悉中国政策，高  
效和灵活  
Familiar with  
Chinese policy ,  
efficient and flexible,

4、现有手持项目  
We have on going  
project, which save  
much time.

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

2、专业的专家和  
顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政  
策，高效和灵活  
Familiar with  
Chinese policy,  
efficient and  
flexible,

4、现有手持项  
目  
We have on  
going project,  
which save  
much time.

GPP signed a series of cooperation agreement with Alter NRG. At present GPP is the Alter NRG strategic partners in China.

广东宝莱玛电力有限公司与Alter NRG签署了一系列合作协议。目前广东宝莱玛电力有限公司是Alter NRG的合作伙伴。



# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

2、专业的专家和顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政策，高效和灵活  
Familiar with  
Chinese policy,  
efficient and  
flexible,

4、现有手持项目  
We have on  
going project,  
which save  
much time.



Qiu Hongbin: Chairman  
邱红斌：董事长

Managing Director of Shun Industrial Co., Ltd., Zhongshan City, Zhongshan blueprint director Jia Technology Co., Pomfret International Electric (Zhongshan) Limited, general manager of Zhuhai passive optical technology industries, vice president of the Association of Women Entrepreneurs, Zhongshan City, vice president of Zhongshan Gaolan Port Economic Development Zone, Chamber of Commerce, Zhongshan fourteenth deputies.

中山市立顺实业有限公司董事总经理，中山蓝图佳科技有限公司董事，福瑞特国际电气（中山）有限公司董事，珠海市能动科技光学产业有限公司总经理，中山市女企业家协会副会长，中山市高栏港经济开发区商会副会长，中山市第十四届人大代表。

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

2、专业的专家和顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政策，高效和灵活  
Familiar with  
Chinese policy,  
efficient and  
flexible,

4、现有手持项目  
We have on  
going project,  
which save  
much time.



## Wang Baolin: legal representative, Director 王葆林：法人代表，董事总经理

Senior Engineer, Researcher of Natural gas Utilization Research Center, South China University of Technology. Intelligent leader with a strong entrepreneurial passion. In 1988 as deputy commander of the project, the project was a power plants in Fujian Shuikou invested by World Bank, and accumulated experience in power plant construction projects. 1995 hired by the Hong Kong Cheung Kong Holdings as the general manager of Guangdong Shantou Electric Power Company, where he accumulated experience in operations management. 2004 entered the CNOOC, as the leadership of the power plant project, where more in-depth practical experience of construction and operation of natural gas power plants have got. And he won the National Science and Technology Progress Award, the State Ministry of Science and Technology Progress Award. With a wealth of professional knowledge, management experience and excellent rganizational skills, so that GPP gets a rapid growth, and develop a solid foundationand for the expansion of enterprises.

高级工程师，华南理工大学天然气利用研究中心研究员。具有强烈创业激情的智慧型领导者，1988年作为工程副总指挥，参与世界银行投资的福建水口发电厂的项目建设，积累了电厂项目的建设经验。1995年被香港长江实业集团聘请为广东汕头电力公司的总经理，积累了电厂运营管理的经验。2004年进入了中海油，担任了发电厂项目的领导工作，对于天然气电厂的项目建设和运营，有更深入实践经验。曾经获得国家科学技术进步奖二等奖，国家电力部科学技术进步奖一等奖。凭借着丰富的专业理论知识、管理经验和出色的组织能力，使广东宝莱玛电力有限公司快速成长，也为企业的发展壮大打下了坚实的基础。

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

2、专业的专家  
和顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政  
策，高效和灵活  
Familiar with  
Chinese policy,  
efficient and  
flexible,

4、现有手持项  
目  
We have on  
going project,  
which save  
much time.



Professor Hua Ben: Director, Chief Scientist.  
华贵教授：董事，首席科学家

Professor of chemical engineering, energy engineering professor, doctoral tutor. South China University of Natural Gas Utilization Research Center Director. the Ministry of Education Key Laboratory of Heat Transfer and saving the academic advisory committee, China Energy Research Society of thermodynamics and engineering applications committee vice director of the China Institute of Process Systems Engineering Systems Engineering Technical Committee; expert committee member of China Energy Network Research Center, members of the Group of Professional Committee of China Construction Industry Association building energy efficiency, China Real Estate Chamber of energy systems consultant, Guangzhou energy Industries Association. 2000-2005 National Key Basic Research (973) "energy efficient key scientific issues," chief scientist; CPPCC session of the Standing Committee of Guangdong Province, 8,9.

化学工程教授，能源工程教授，博士生导师。华南理工大学天然气利用研究中心主任。强化传热与过程节能教育部重点实验室学术委员会顾问，中国能源研究会热力学与工程应用专委会副主任，中国系统工程学会过程系统工程专委会委员；中国能源网研究中心专家委员会委员，中国建筑业协会建筑节能专业委员会专家组成员，中国房地产商会能源系统顾问，广州市能源学会副理事长。2000—2005年国家重点基础研究（973）项目《高效节能的关键科学问题》首席科学家；政协广东省第8、9届常委。

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

2、专业的专家  
和顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政  
策，高效和灵活  
Familiar with  
Chinese policy,  
efficient and  
flexible,

4、现有手持项  
目  
We have on  
going project,  
which save  
much time.



## Professor Sheng hongzhi: Technical Consultant

盛宏至：技术顾问

Researcher of institute of Mechanics, Chinese Academy of Sciences, special government allowances, Professor, Graduate School of Chinese Academy of Sciences, China Engineering Thermophysics, executive director of the International Committee exchange director, team leader China Environmental Protection Industry Association solid waste management committee, Chinese Translators Association (International Translation family members of the League) National Board of Directors, expertise in the field of fluidized bed combustion technology, waste incineration technology, pre-processing technology, responsible for China 863, the AC plasma pyrolysis technology and complete sets of medical waste treatment equipment research, development a 5 tons / day plasma furnace for hazardous waste / medical waste disposal.

中科院力学所研究员，获政府特殊津贴，中国科学院研究生院教授，中国工程热物理学会常务理事，国际交流工作委员会主任，中国环保产业协会固体废物处理委员会专家组组长，中国翻译家协会（国际翻译家联盟成员）全国理事，特长领域为流化床燃烧技术、废弃物焚烧技术、前处理技术等，负责中国863计划中，交流等离子体裂解处理医疗废物成套技术与装置研制，研制5吨/日的危险废物/医疗垃圾等等离子体裂解炉。

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司  
良好的合作关系  
Good  
relationship  
and strategic  
cooperation  
with Alter NRG

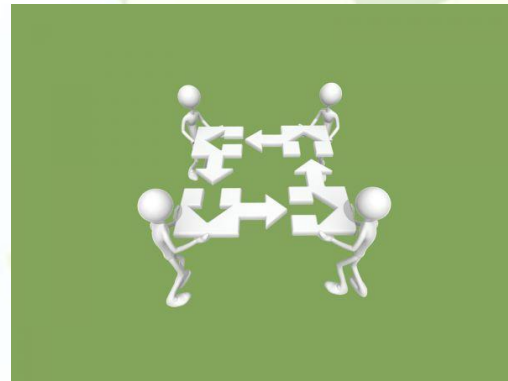
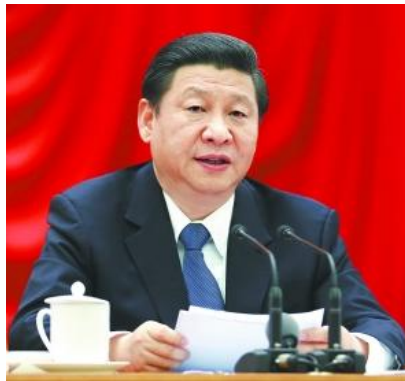
2、专业的专家和顾问  
Professional  
experts and  
consultants as  
technology  
support

3、熟悉中国政策，高效和灵活  
Familiar with  
Chinese policy ,  
efficient and  
flexible,

4、现有手持项目  
We have on  
going project,  
which save  
much time.

The government's policy is very important for project in China. GPP knows key of project to build and operate, and has good grasp of the government-oriented.

在中国进行项目，政府的政策非常重要。宝莱玛熟知项目筹建和运营的关键，和对政府导向的良好把握。



GPP as a private enterprise, have efficient execution team, and in the operation of the project has an unmatched efficiency and flexibility for problem solution.

宝莱玛公司作为民营企业，拥有高效的执行团队，并且在项目运营中针对问题拥有快速反应和无以伦比的灵活性。

# Advantages of GPP/ 宝莱玛的优势：

1、与西屋公司良好的合作关系  
Good relationship and strategic cooperation with Alter NRG

2、专业的专家和顾问  
Professional experts and consultants as technology support

3、熟悉中国政策，高效和灵活  
Familiar with Chinese policy, efficient and flexible,

4、现有手持项目  
We have on going project, which save much time.



GPP has done a lot of preliminary work, to research the market demand, to spread plasma gasification technology, to develop related industries, to contact with government departments, to cooperate with research units, as well as excavation and preparatory valuable projects. We have handheld projects, which can be start as soon as possible, and can save a lot of time, manpower and money.

宝莱玛已经做了大量的前期准备工作，包括对市场需求的调研，等离子技术的推广，相关行业的培养，政府部门的联系，科研单位的合作，以及项目的开发和前期筹备等等。我们拥有手持的项目，可以尽快进行，能节省大量的时间，精力和资金。



# Plasma gasification projects in China

## 中国国内等离子气化项目



### Bijie City, Guizhou Province, China

### 中国贵州省毕节市

- Dispose 600tpd of Bijie MSW and generate electricity of 15 MW
- 可以处理600吨/天的毕节生活垃圾，并产生电力15 MW
- Project use slag of plasma gasification to make insulation materials with high added value
- 该项目将等离子气化产生的渣生产具有高附加值的保温材料
- The project has entered the design engineering phase
- 项目已经进入设计工程阶段



# Plasma gasification projects in China

## 中国国内等离子气化项目



Hazardous waste, medical waste and flyash dispose facility in Shanghai, China,

坐落于中国上海的危险废物、医疗废物和垃圾焚烧飞灰玻璃化设施

- Integration with existing incinerators that can treat fly ash and other intractable hazardous waste .

同现有焚烧炉整合，可以接受焚烧飞灰以及其他难处理的危险废物。

Reduce the cost of fly ash disposal  
improved environmental performance  
减少飞灰的处置成本，改进环保性能

**The growing of plasma gasification facilities indicate which has been more widely accepted in China.**  
**日渐增多的等离子气化设施表明在中国已经被越来越广泛的接受。**



### 3、 In Hand Project 进行中的项目



# The Currently Underway Projects of GPP / 进行中的项目

## (1) Zhuhai Gaolan Port Economic Zone Project: / 珠海高栏港经济区项目:

Zhuhai Gaolan Port Economic Zone Industrial waste and hazardous waste resource cleaning recycling demonstration project :  $2 \times 1000$  tons / day, with a total investment of about 2.0 – 2.8 billion RMB

珠海高栏港经济区”工业和危险废物资源化清洁循环利用示范工程“项目：  
2X1000吨/日，总投资约20-28亿元。

Dispose industrial waste, chemical waste, sewage sludge comes from the park chemical companies as fuel , cooperated with petroleum coke, and help to treat the incineration fly ash of city. Generating electricity, steam and hot water supply to the park , as well as Chemistry.

以园区化工企业产生的工业废弃物，化工废弃物，污水污泥为燃料，补充以石油焦，同时可以处理本市产生的焚烧飞灰。产生电能，蒸汽，热水或化学品供应给园区。

# Importance of GPP HW dispose project for Gaolan Port Economic Zone

## 宝莱玛危险废物处理项目对高栏港经济区重要性



(1) Good for Gaolan Port Economic Zone (Zhuhai Economic and Technological Development Zone) Create a national eco-industrial park.

(1)有利于高栏港经济区(珠海经济技术开发区)创建国家生态工业示范园。

1.1, Help for the waste reduction and recycling targets

1.1、有利于实现物质减量与循环指标

1.2, Help to control pollution targets

1.2、有利于实现污染控制指标

(2) Help to improve Gaolan Port Economic Zone safety management of hazardous wastes and hazardous chemicals, reduce or avoid the collection, storage and transport risk of hazardous waste .

2)有利于加强高栏港经济区(珠海经济技术开发区)的危险废物和化学危险品的安全管理,减少或避免发生危险废物收集、储存和运输环节发生环保事故的风险。

(3) Help to reduce the cost of processing costs of hazardous waste for Gaolan Port economic zone enterprises.

(3)有利于减轻高栏港经济区内产生危废企业的处理费用成本。

(4) Will help strengthen port of Gaolan hazardous waste management.

(4)有利于加强高栏港港口的危险废物管理。

# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

Lay in the middle of the petrochemical zone ,the location is perfect.

位于高栏港石化区的中央，地理位置极佳。



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目：

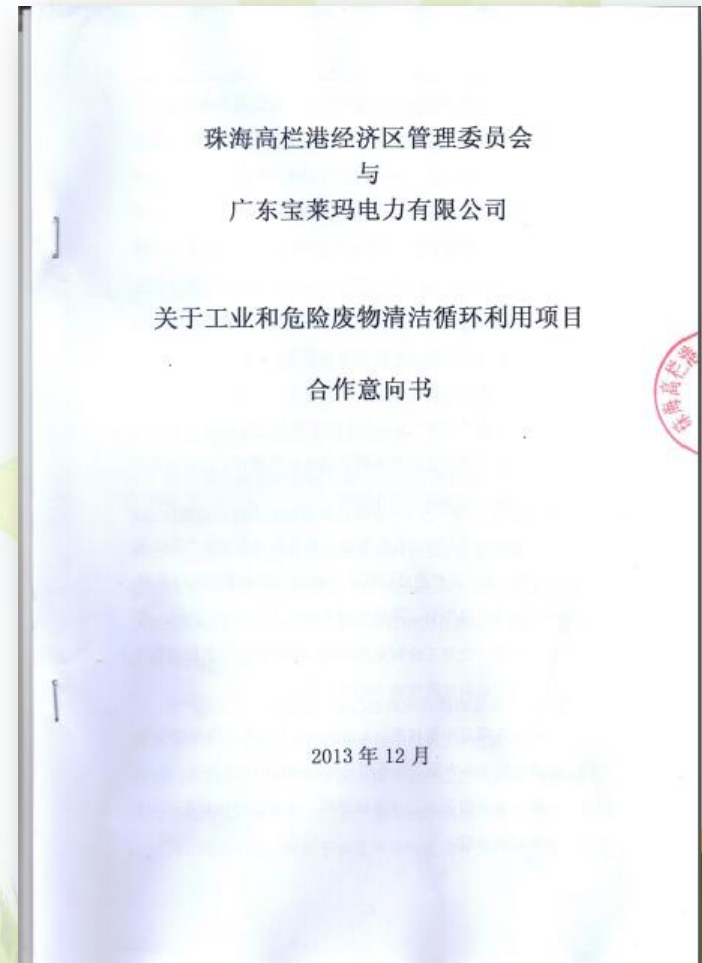
Project location: / 项目地址:



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

We have reached a preliminary agreement on the project with Zhuhai Gaolan Port Economic Zone Management Committee and the Zhuhai municipal government:  
已与珠海高栏港经济区管理委员会和珠海市政府达成初步协议。





# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

Accompanied the leaderships of Guangdong Environmental Protection Bureau to India's hazardous waste plasma gasification project pilot project in Puna.

陪同广东环保厅领导赴印度考察普纳的等离子气化处理危废项目。

They recognized plasma gasification technology for hazardous waste treatment, actively support this project, and guide this project application route, and hope this project can be done quickly, and been approved this year, become it will be **demonstration project in Guangdong Province.**

环保厅对等离子气化技术处理危废非常认可，对本项目非常支持，对本项目审批路线进行指导，并希望本项目能够尽快进行，今年内获得核准，**成为广东省的示范项目。**



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

We maintain close and good communication and exchanges with Plasma gasification counterparts of domestic, and hope to jointly promote the development of plasma gasification technology in China.

与国内等离子气化同行保持紧密和良好的沟通和交流，共同推动等离子气化技术在中国的发展。

GTS Fly ash and medical waste treatment project in Shanghai, which began test operations in January 2014.

图为与吉天师在上海固废中心的等离子气化处理飞灰和医废的项目，该项目2014年1月开始调试运营。



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

Foster Wheeler has been carried out with a series of communication, Who we hope to conduct the feasibility study, because it has the valuable experience from Tees Valley project.

我们积极参加环保方面的展会和论坛，向政府和民众推广等离子气化技术，促进等离子行业市场培养。

Guangdong Provincial garbage incineration Flyash disposal economic policy seminar technology organized by Guangdong Provincial Waste Management Center in Zhongshan city in December 2013 .

图为2013年12月，在中山召开的，由广东省废物管理中心主办的广东省生活垃圾焚烧飞灰处理处置技术经济政策研讨会。



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

Foster Wheeler has been carried out with a series of communication, Who we hope to conduct the feasibility study, because it has the valuable experience from Tees Valley project.

已经与福斯特惠勒进行一系列沟通与交流，希望福斯特惠勒进行可行性研究，因为它拥有提斯谷项目的宝贵经验。



# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

We count the quality and quantity of hazardous waste statistics of the park, analysis the hazardous waste typical composition and other parameters necessary for gasification ,to supply for calculating the material-energy balance of the gasification process required.

经过大量的工作，统计园区的危废种类和数量，分析收集园区危废的典型元素组成和其他气化所必须的参数，以供气化物质能量平衡过程计算所需。



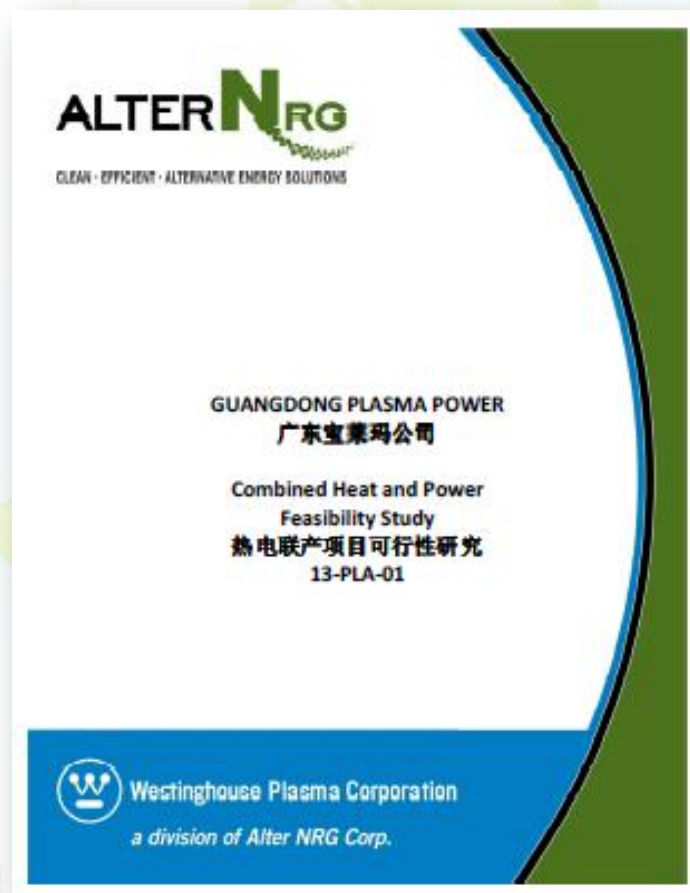
The image shows a stack of documents, likely project reports or data collection sheets. The top document is a table with multiple columns and rows, containing Chinese text and numerical data. The table appears to be a detailed record of hazardous waste statistics, including categories, quantities, and chemical compositions. The text is dense and organized in a structured format, typical of a technical or scientific report.

# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

Alter NRG has been commissioned to complete the Gaolan Port economic zone project feasibility study report, the three programs as single petroleum coke, single coal, and hazardous waste: petroleum coke = 1:1 are compared. Petroleum coke program can maintain the basic commercial operation , the program treating hazardous waste has good economical efficiency.

已经委托西屋公司完成了高栏港经济区项目的可行性研究报告，对比了单独使用石油焦、煤，以及危废：石油焦=1:1的三个方案。单独使用石油焦即可维持项目基本商业化运营，处理危废的方案经济性良好。



# Element analyses of GPP Gaolan Port Project Feedstock

## 宝莱玛珠海高栏港制氢项目 - 原料

	Subject 序号名称	SYM 符号	Unit 单位	IW & HW 工业和危险废物	Petrol coke 石油焦
Industry analyse 工业分析	全水分	Mt	wt%	23.85	3.9
	空气干燥基水分	Mad	wt%	13.02	3.9
	空气干燥基灰分	Aad	wt%	30.87	0.94
	空气干燥基挥发分	Vad	wt%	30.33	11.33
	空气干燥基固定炭	FCad	wt%	41.43	87.81
Element analyse 元素分析	干燥无灰基碳	Cdaf	wt%	46.93	89.37
	干燥无灰基氢	Hdaf	wt%	16.94	4.75
	干燥无灰基氮	Ndaf	wt%	9.49	2.00
	收到基硫	Sar	wt%	1.00	3.00
	干燥无灰基硫	St,daf	wt%	2.21	3.15
	干燥无灰基氧	Odaf	wt%	24.41	0.73
Other 其它	收到基低位发热量	LHV.ar	MJ/Kg	13.018	33.231

# ( 1 ) Zhuhai Gaolan Port Economic Zone Project: 珠海高栏港经济区项目 :

## Project development: / 项目进展 :

China Wuhuan Engineering Co. Ltd. has been commissioned for early feasibility study, currently initially completed. Overall process viability, localization supplier, overall balance and other facts have been rationalized . The program treating hazardous waste has good economical efficiency.

已经委托中国五环工程有限公司进行整体项目初可研，目前初步完成。项目的整体工艺可行性，本地化供应商，整体平衡等都已经理顺。处理危废的方案经济性良好。

广东宝莱玛电力有限公司

工业和危险废物资源化清洁循环利用示范工程

## 预可行性研究报告

档案号：13150-FP08-01

中国五环工程有限公司

2014年01月

武汉



# Process Flow / 工艺流程图



危险废弃物等离子气化工艺流程图

# The Currently Underway Projects of GPP / 进行中的项目

(2) Zhongshan City sludge and flyash treatment projects:  
中山市工业污泥和飞灰处理项目:

Zhongshan has only one MSW sludge treatment enterprises while there are many industry sludge need to dispose such as dyeing sludge & electroplating sludge. Flyash in landfills, without permission. The government urgent needs a local project to solve these problems. 中山市仅有一个污泥处理企业，目前仅可处理生活污水污泥，中山有许多印染和电镀企业需要处理工业污泥。目前飞灰采用填埋，未获许可。政府急需能彻底解决问题的本地危废处理项目。



# The Currently Underway Projects of GPP / 进行中的项目

## (3) National Health Technology Park of Zhongshan torch zone project : 中山火炬区健康基地项目:

National Health Technology Park Medical Waste Gasification project  $2 \times 235$  tons / day, with a total investment of about 700 million Yuan. Disposes the medicament and drug waste from the Park and supplies power and steam for the companies.

健康基地医疗废弃物气化发电项目：2X235吨/日，总投资约7亿元。处理园区的医药废弃物，产生电力与蒸汽供应园区。



# The Currently Underway Projects of GPP / 进行中的项目

## (4) Maoming oil shale project : / 茂名油页岩项目:

Maoming oil shale project  $4 \times 1000$  tons / day WPC plasma gasification + Syngas Methanation.

油页岩资源综合利用项目：4×1000吨 WPC等离子气化炉 + 合成气甲烷化。



# 4、Prospect 前景



## Extension technology of GPP for IPGCC / GPP等离子技术延伸

◆ Vitrified slag account 1/4 or more of the material input, it is not yet fully utilized. If it can be deep-processing, it will be able to greatly improve the added value of products, and increase corporate profits. As effluent vitrified slag is in hot molten status, and can be directly added nucleus material or other additional materials that needed to facilitate the processing, which can save large amounts of energy compared with ordinary glass factory. 玻璃熔渣占投入物料**1/4**以上，目前尚未能充分将其利用。如果能够将其深加工，将能大大提高产品的附加值，增加企业利润。作为排出物的玻璃渣处于高温熔融状态，可直接补加晶核材料或其他所需材料，方便加工，较普通玻璃厂节省大量能量。



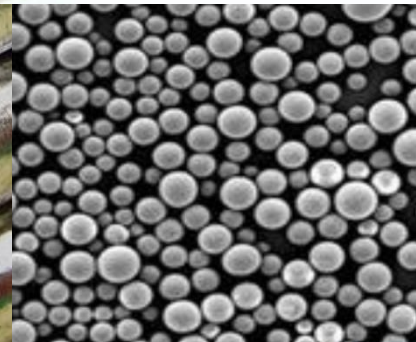
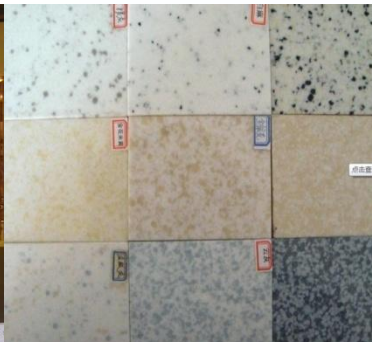
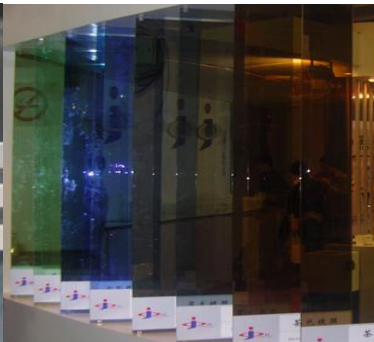
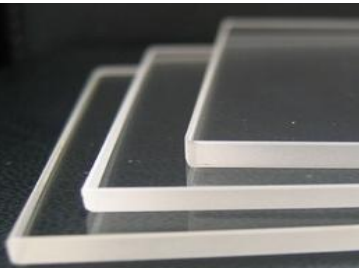
◆ GPP cooperates with universities and tailings utilization centers, take easy processing advantages of plasma high-temperature vitrified slag, and develop its higher value of products.

宝莱玛与高校和尾矿利用中心合作，利用等离子高温熔渣易加工的优势，开发其更高的价值的产品。

# Application of Vitrified Slag / 玻璃化熔渣应用



Vitrified slag can be used to high value-added products such as :Specialty glass, glass-ceramic ,glass wool and so on.  
玻璃化熔渣可用于制造特种玻璃、微晶玻璃、玻璃棉等高附加值产品。



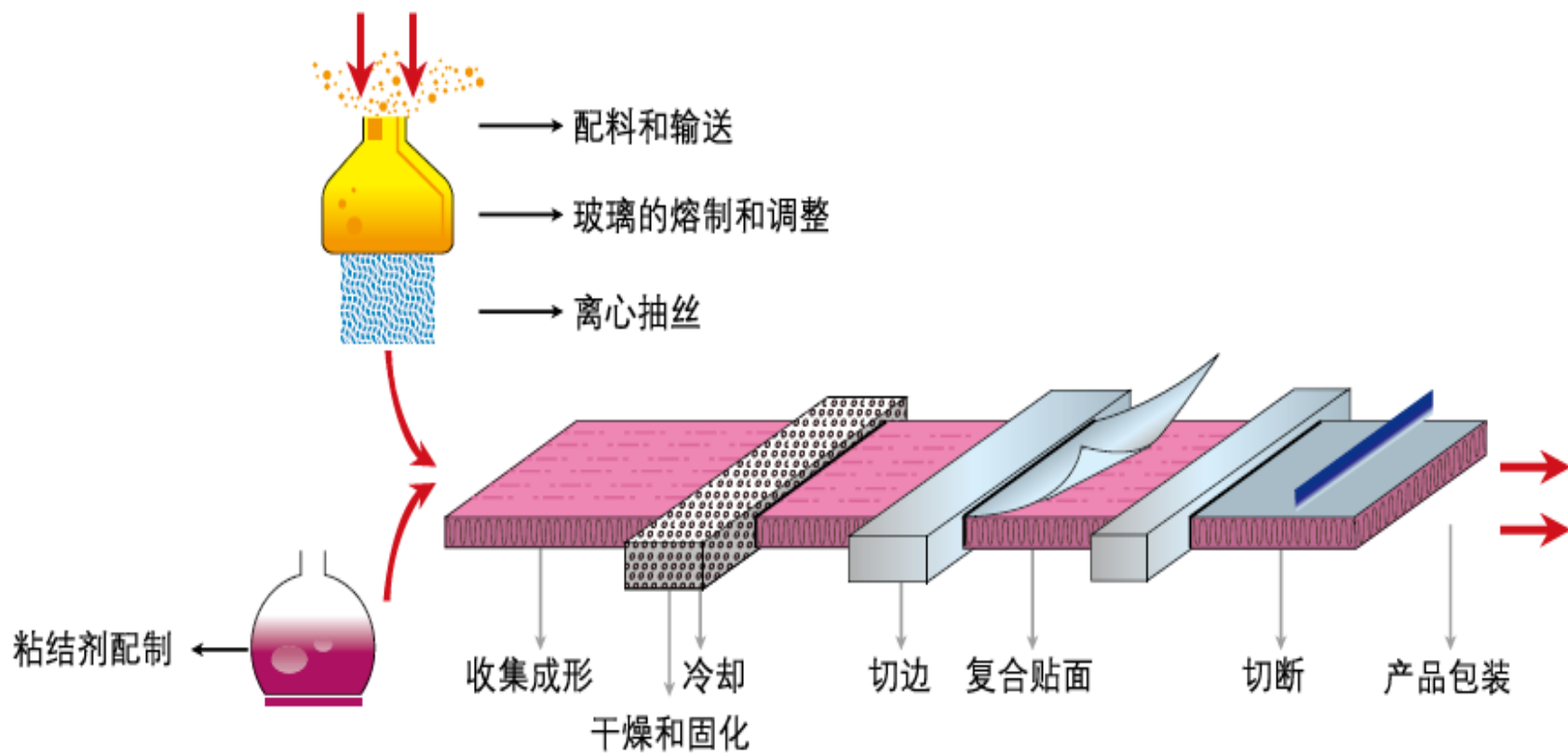
## 子项目：炉渣制矿棉项目

随着我国工业化和城镇化过程的加快。每年新增城镇建筑面积达到30亿平方米。由于缺乏有效的保温材料。绝大多数建筑冬冷夏热。每年要耗费巨量的能源来供暖和降温。建筑节能是最大的节能减排和低碳经济手段。矿棉属于硅酸盐系统。成分包括二氧化硅、三氧化二铝、氧化钙、氧化镁等，具有吸音效果好、隔热性能高、产品质量轻、装饰效果好、防火等级高等优点。是一种优良的节能保温材料。被广泛应用于工业保温、隔热、隔音、建筑节能及装饰等领域。

矿棉的经济效益也很可观。普通矿棉制品价格每吨 2500元-5000元。而成型矿棉、复合矿棉每吨售价在 8000 元-16000元左右。



# 工艺流程图



# Eco-Industrial Park Recycling Economy

## 生态工业园循环经济

Circular economy is a kind of development model of economic growth in line with available concept of sustainable, with the core is efficient use of resources and recycling, with the principle is "reduce, reuse, recycle (ie, 3R)", with the basic characteristics is low consumption, low emission, high efficiency, is a fundamental transformation of the traditional growth model to the "mass production, mass consumption and mass disposal," .

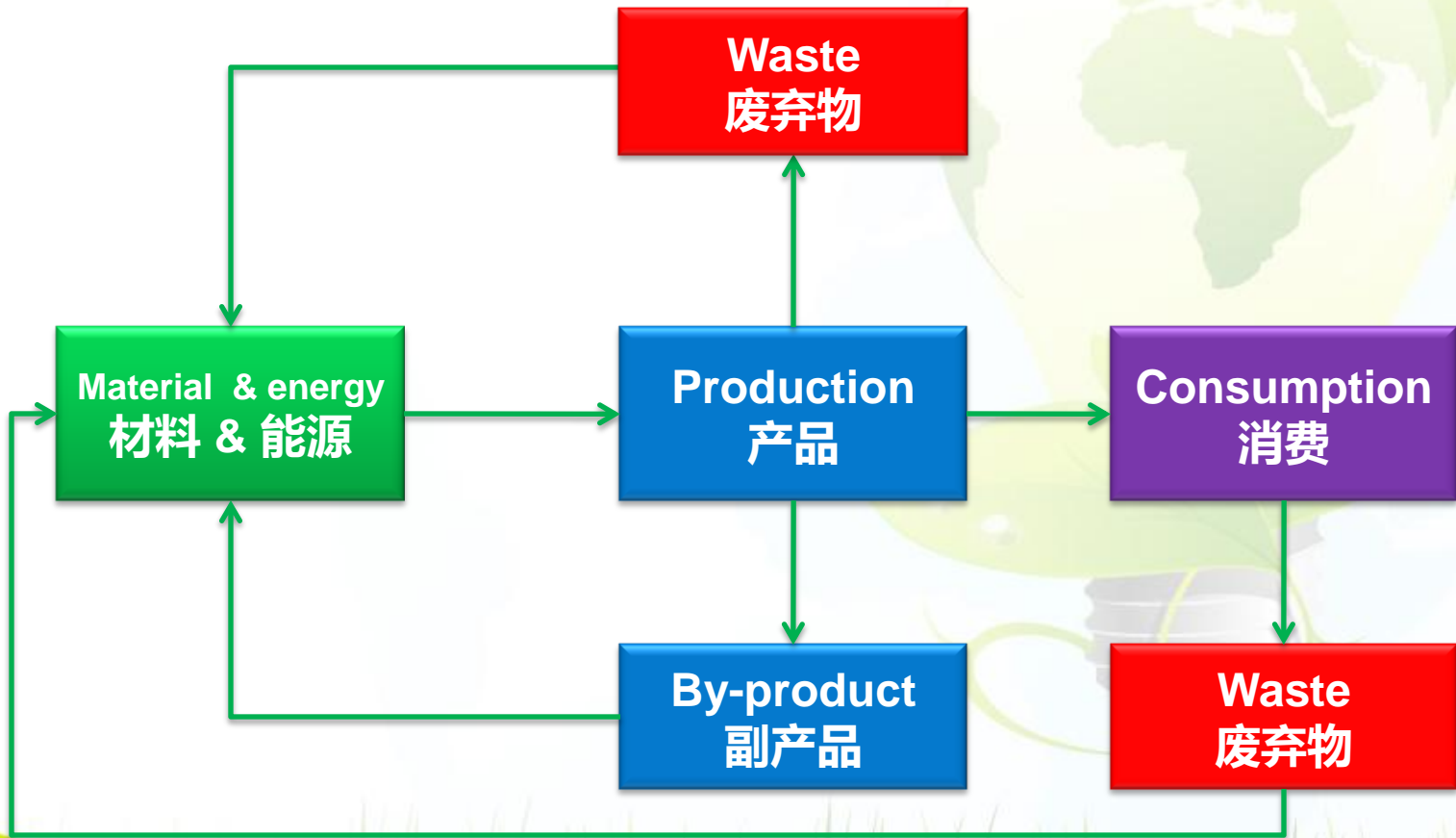
**循环经济**是一种以资源的高效利用和循环利用为核心，以“减量化、再利用、资源化（即3R）”为原则，以低消耗、低排放、高效率为基本特征，符合可持续发展理念的经济增长模式，是对“大量生产、大量消费、大量废弃”的传统增长模式的根本变革。

**IPGCC is the best solution for Recycling Economy**  
**IPGCC就是循环经济最好的解决方案。**

We help local government to solve waste treatment problem, to build a recycling economy for the Eco-Industrial Park.  
我们帮助当地政府解决废弃物问题，构建生态园区的循环经济。

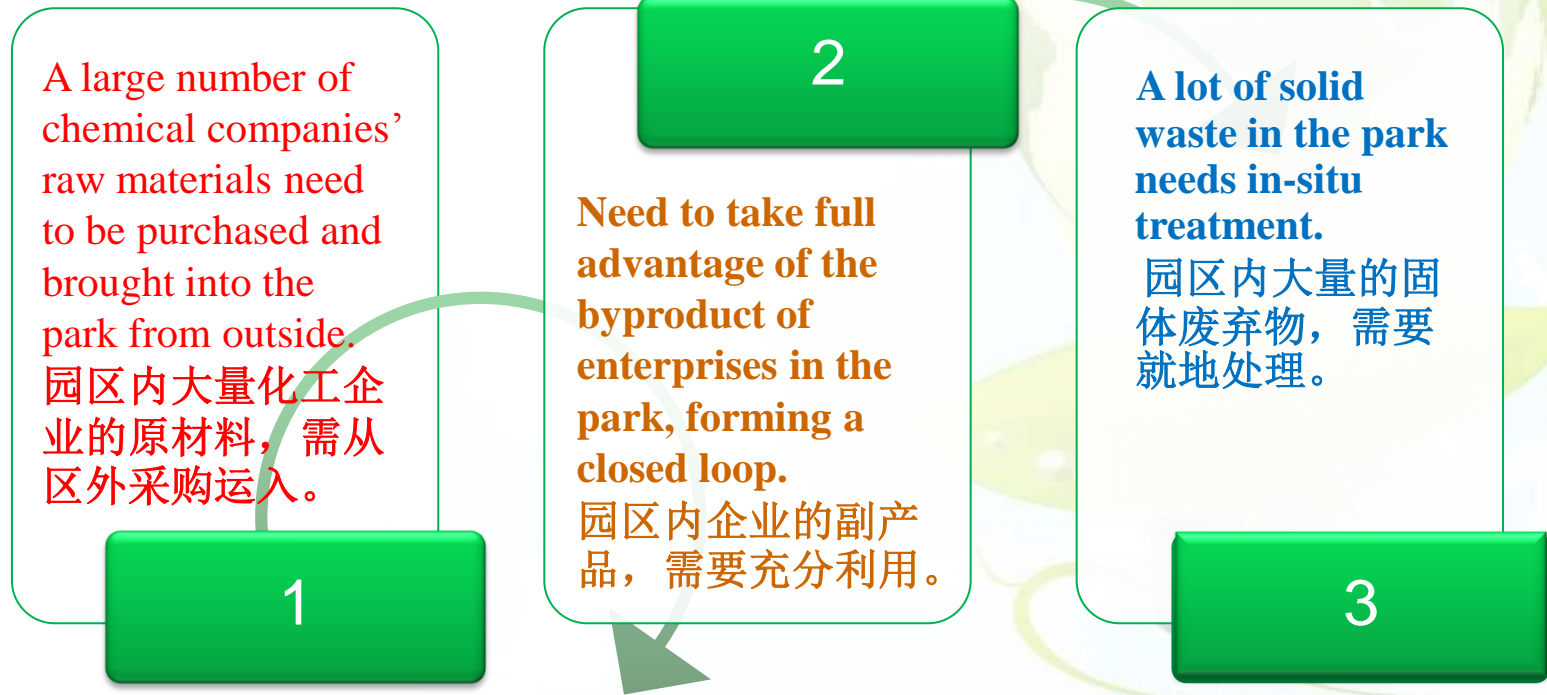


# Eco-Industrial Park - Flowchart of Raw Materials, Energy Between Enterprises / 生态工业园能量-物料流程图



# Eco - industrial Park's Key Issues Need To Be Solved

## 生态工业园需要解决的关键问题





## Project Prospect / 项目前景

( 1 ) Because of the efforts and cooperation of GPP, Guangdong Provincial Environmental Protection Bureau began more and more approve the plasma gasification technology for waste disposal.

在宝莱玛的努力和配合下，广东省环保厅开始逐渐认可等离子气化技术处理废弃物。

Since the central government made increasingly stringent environmental requirements, the pressures and demands of environmental of local governments have become more sophisticated, they require more advanced technology to improve the environment in order to meet national requirements.

由于中央政府对环境保护提出越来越严格的要求，因此地方政府的环保压力和需求也越来越高，他们需要更先进的技术来改善环境，以满足国家要求。

With daily increasing prices of raw materials, competitive of plasma gasification technology is growing, the economy is getting better, the market outlook is increasingly brighter.

随着原材料价格的上涨，等离子气化技术的竞争力越来越强，经济性越来越好，市场前景也日益光明。

## Project Prospect / 项目前景

( 2 ) Gaolan Port project is typical. 1000tpd capacity, suitable for the large oil or chemical park promotion.

高栏港项目非常典型。1000tpd的处理量，适合在大型石油或化工园区推广。

We can predict the there are more than 20 similar projects can be promoted in China, the market capacity is at least 20 billion

预测全中国有20个以上类似项目可以推广，市场容量至少200亿。



# Meaning of Gaolan Port Project /高栏港项目的意义

- Gaolan Port project is typical circular economy project for chemical Industrial Park , once operation successful , it may be highly reproducible;
- 高栏港项目是典型的化工园区循环经济项目，一旦成功运营后，可复制性极高；
- Many governments and companies are sidelined to plasma gasification, once there is a large domestic project operations, as a demonstration, will inevitably lead to a large to follow. So seize the initiative is extremely important;
- 许多政府和企业对等离子气化持观望态度，一旦国内有大型项目运营，作为示范项目，必然引发大量跟风。因此把握先机极其重要；
- Using of Guangdong Province in the leading position of the China , taking the lead in this operation with the world's largest-scale Plasma gasification project, has a significant impact for Guangdong Province, even for the China. We can facilitate to breakthrough in Guangdong Province, and quickly occupied the Chinese market.
- 利用广东省在中国的领先地位，在此率先运作世界最大的等离子气化项目，对于广东省乃至全中国都有重要影响。便于以广东省为突破口，迅速占领中国市场。



Caring for the earth, Protect the environment to leave  
A better world for Future generations.  
爱护地球，保护环境，给子孙后代留一个更美好的世界。



Heal the world ,  
Make it a better place ,  
For you and for me and the entire human race 。  
There are people dying ,  
If you care enough for the living ,  
Make a better place for you and for me 。

... ..

You and for me

—— 《Heal the world》  
Michael Jackson



**Thank you for listening !**

**谢谢观映**

