



WTE Growth in China

Chongqing Waste to Energy Research and Technology Institute
October, 16. 2008

1.



重庆垃圾焚烧发电技术研究院

❖ China Municipal Solid Waste

- High MSW generation and inventory in China
- No “formal” sorting
- High moisture, Low Heating value

2.



重庆垃圾焚烧发电技术研究院

MSW in China



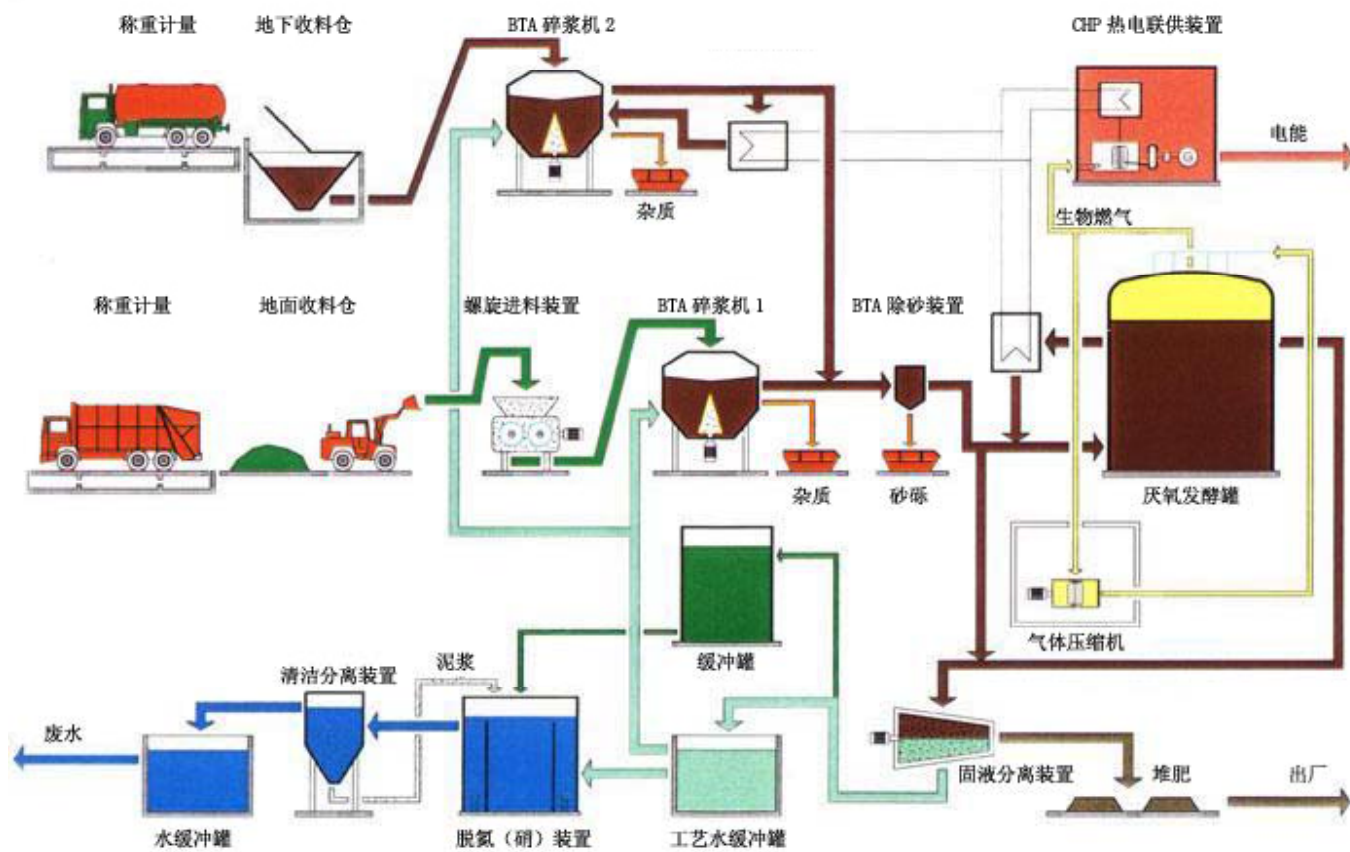
3.



重庆垃圾焚烧发电技术研究院

❖ Status of Waste Management in China

Waste disposal in the past—Anerobic Digestion



4.



重庆垃圾焚烧发电技术研究院

❖ Status of Waste Management in China

Current waste disposal —Landfilling



5.



重庆垃圾焚烧发电技术研究院

❖ Status of Waste Management in China

Future of Waste Management——Waste-To-Energy



Chongqing Tongxing Plant

6.



重庆垃圾焚烧发电技术研究院

Status of Waste to Energy Plant in China

- 67 facilities built in China by 2005
- Treatment capacity: 33,010 T/D by 2005
- 140 facilities built or under construction in China so far

7.



重庆垃圾焚烧发电技术研究院

❖ China “11th- Five-Year Plan” (2006—2010)

- ◆The National “11th Five-Year Plan” waste disposal technology roadmap
- ◆The National “11th Five-Year Plan” waste disposal facilities
- ◆Regional WTE plant planning
(China updates national plan every five years.)

8.



重庆垃圾焚烧发电技术研究院

⋮ About CWTERT Institute



Deputy Mayor attended Signing Ceremony

9.



重庆垃圾焚烧发电技术研究院



Goal

To build domestic R&D center in WTE industry, WTE technology personnel training base and platform for the development of WTE industry.

10.



重庆垃圾焚烧发电技术研究院



Research Plans

Research on waste properties
Research on waste pre-processing systems

Development of WTE combustor and grate systems
Research on control systems

Investigation of the pollutant formation mechanisms

Research on waste treatment of landfilled MSW and sludge

11.



重庆垃圾焚烧发电技术研究院

Resources

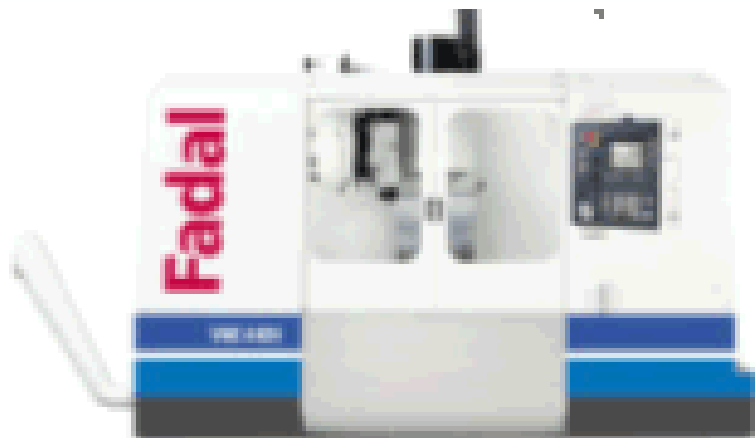
- Workshop and laboratories
- Equipment
- Software
- Researchers

12.



重庆垃圾焚烧发电技术研究院

Equipment



machining center
美国法道数控铣床



high speed machining center
瑞士米克郎高速铣床



Coordinate Measuring Instrument
三坐标测量仪



EDM

13.

电火花成型机



重庆垃圾焚烧发电技术研究院

Waste Analysis Instruments 垃圾特性测试仪器



14.



重庆垃圾焚烧发电技术研究院

Waste Character Research

Waste Composition Analysis

Sample	Food	Plastics	Paper	Wood	Fiber	Glass	Metal	Slag	Others	Percentage
1#	41.61	15.00	12.56	1.08	2.06	2.82	1.12	22.96	0.78	99.99
2#	52.00	12.30	7.37	0.34	1.43	3.78	0.23	22.23	0.32	100.00
3#	52.26	17.26	16.62	1.67	0.83	0.58	0.00	10.26	0.51	99.99
Average	48.62	14.85	12.18	1.03	1.44	2.39	0.45	18.48	0.54	99.98

15.



重庆垃圾焚烧发电技术研究院

热值分析 MSW Value Analysis

Heating Value

Sample	Heating Value (kJ/kg)					
	Food	Plastics	Paper	Wood	Fiber	Slag
1#	12321	23514	15635	14516	20151	—
2#	12462	23140	16564	14516	21312	—
3#	11307	23634	16080	14516	18555	—
Average	12030	23429	16093	14516	20006	—

16.



重庆垃圾焚烧发电技术研究院

Waste Moisture Measuring

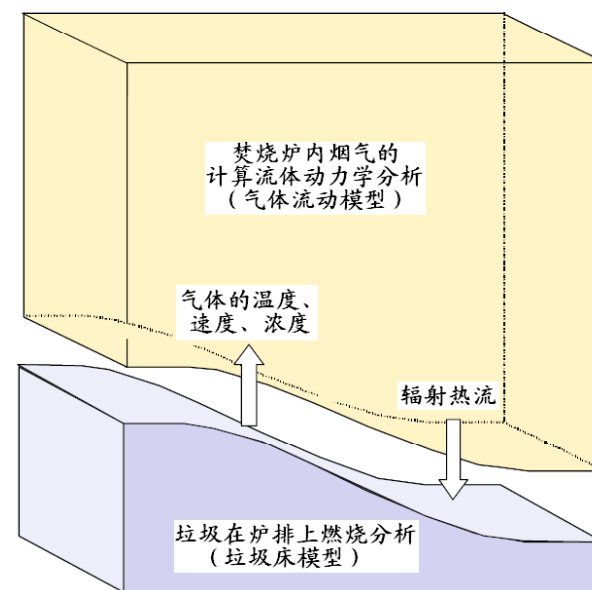
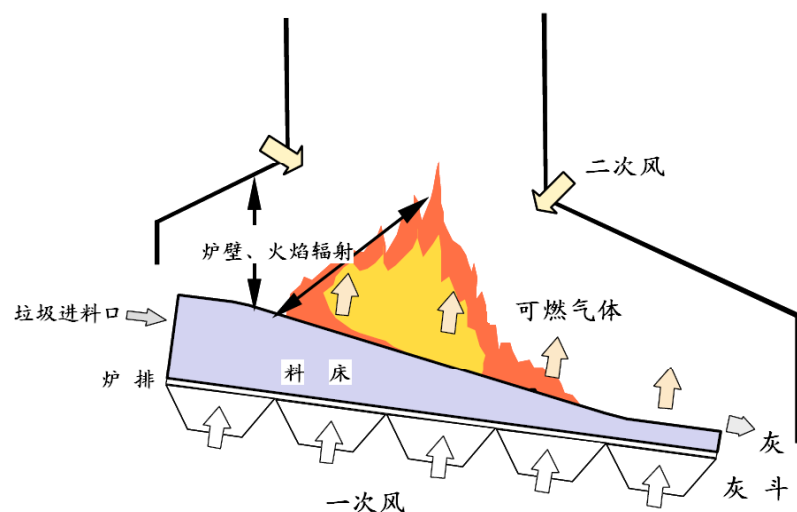
Sample	Moisture(%)					
	Food	Plastics	Paper	Wood	Fiber	Slag
1#		48.80	59.56		57.50	25-30
2#	68.50	45.37	63.75		50.20	25-30
3#	72.78	48.38	56.08	66.39	48.40	25-30
Average	70.64	47.52	59.80	66.39	52.04	25-30

17.



重庆垃圾焚烧发电技术研究院

垃圾焚烧工艺研究 Waste to Energy Process Research



垃圾的燃烧模型 **combustion model**

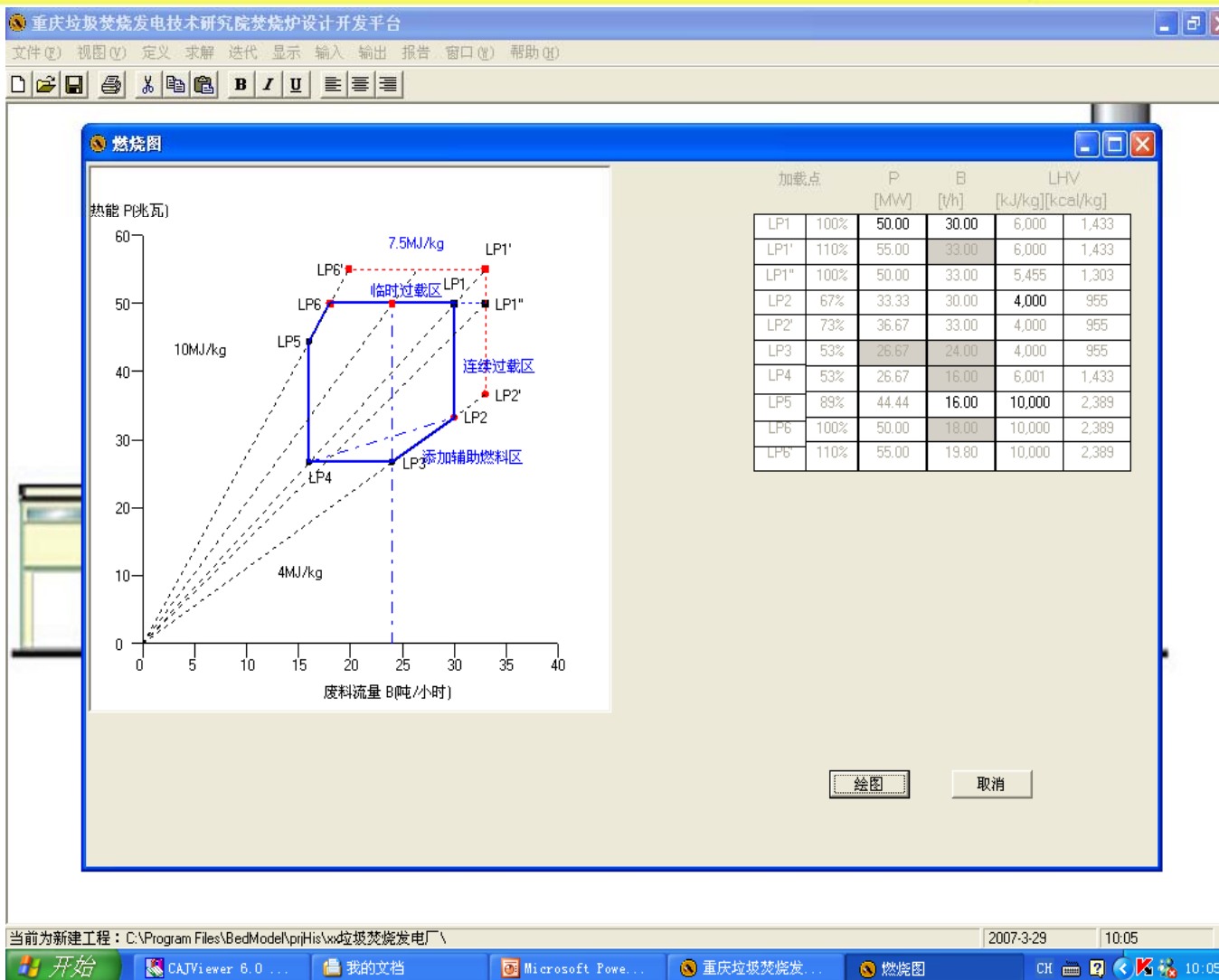
垃圾燃烧工艺仿真 **process simulation**

19.



重庆垃圾焚烧发电技术研究院

Waste to Energy Process Research

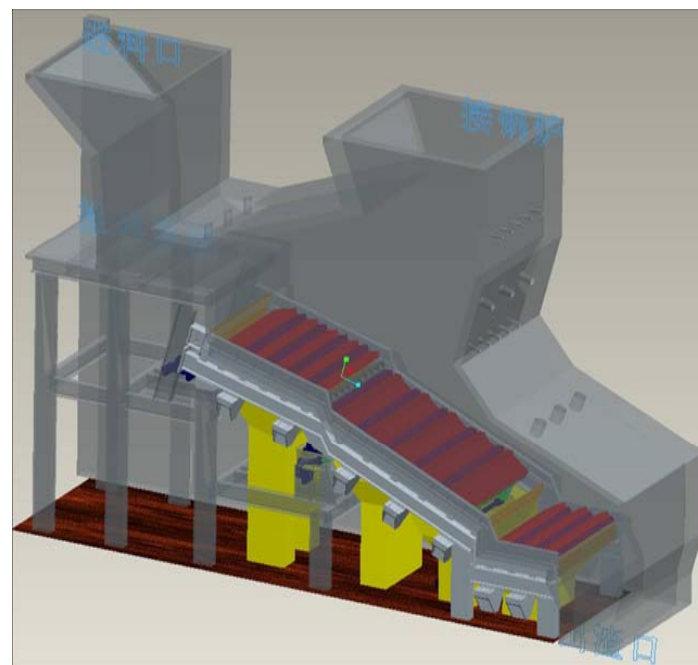
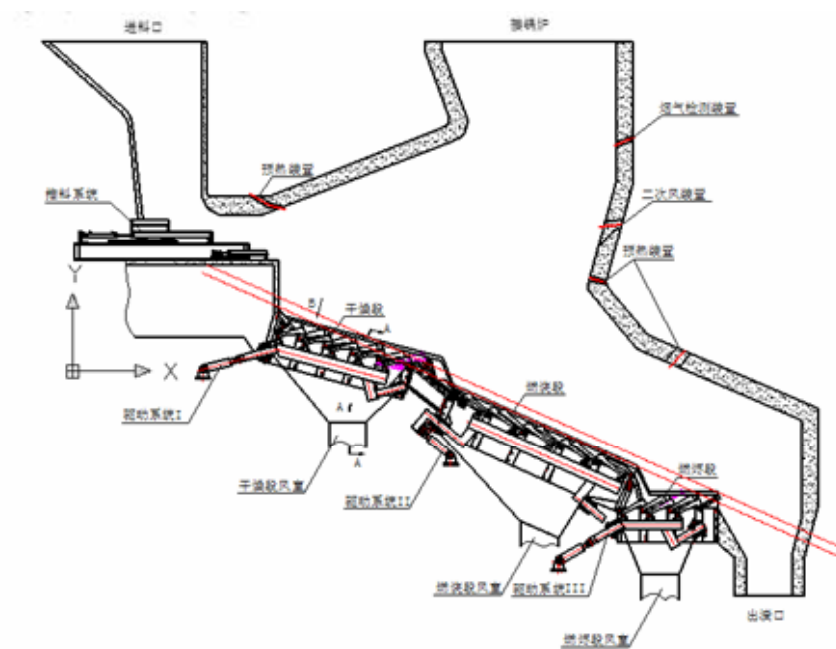


20.



重庆垃圾焚烧发电技术研究院

垃圾焚烧装备研究——炉排 Equipment Research---Grate

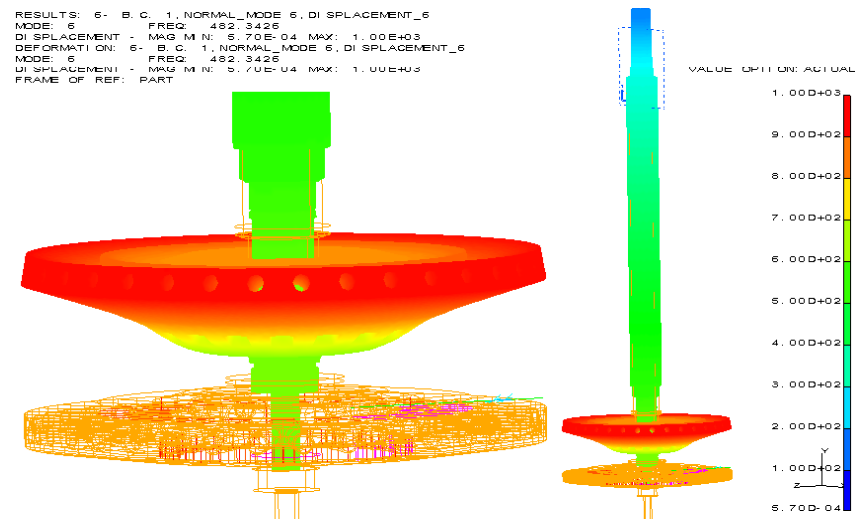


21.



重庆垃圾焚烧发电技术研究院

Equipment Research--Atomizer 垃圾焚烧装备研究——雾化器



dynamic analysis of Atomizer

雾化器工作过程中的动力学分析

22.



重庆垃圾焚烧发电技术研究院

Atomizer Testing 雾化器测试



23.



重庆垃圾焚烧发电技术研究院



Equipment Research--Hydraulic System

垃圾焚烧装备研究——液压系统



24.

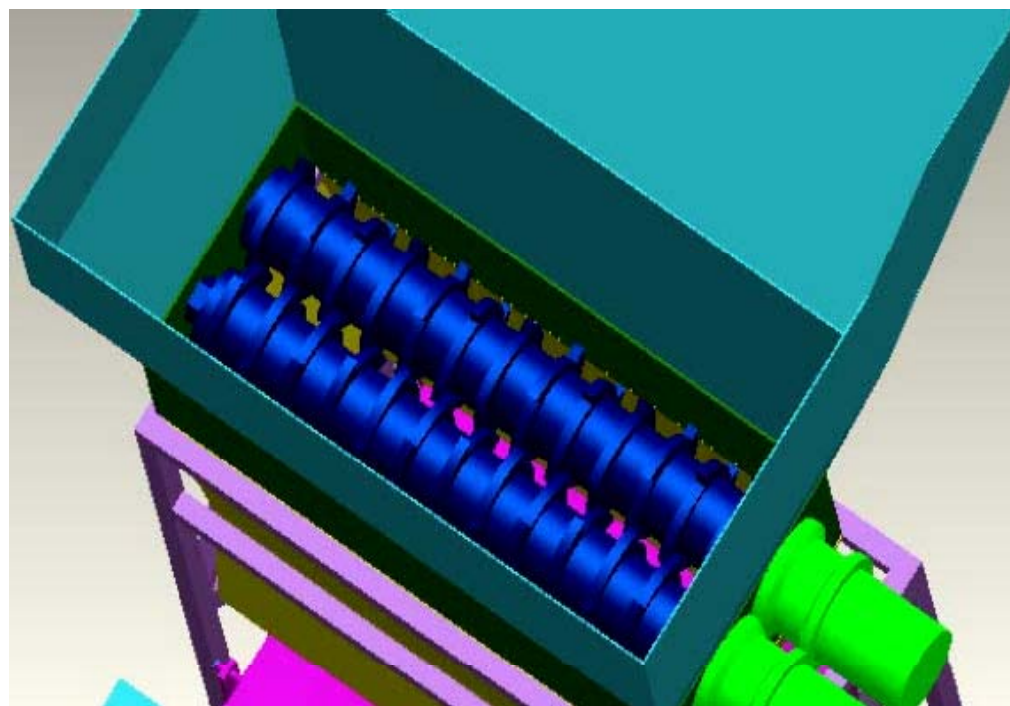
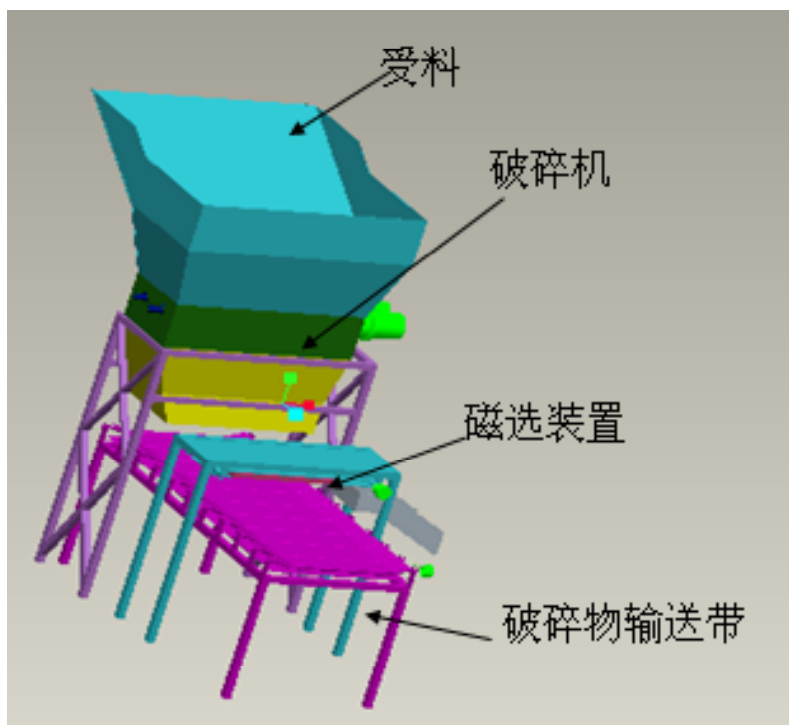


重庆垃圾焚烧发电技术研究院



Equipment Research--Shredder

垃圾焚烧装备研究——破碎机



25.



重庆垃圾焚烧发电技术研究院



Patents

The patents CWTERT has gained:

- 6 invention patents in China
- 19 practical applicability patents in China

26.



重庆垃圾焚烧发电技术研究院



Academic Exchange



27.



重庆垃圾焚烧发电技术研究院



Academic Exchange

Visiting Columbia University



28.



重庆垃圾焚烧发电技术研究院

美国哥伦比亚大学地球工程中心中国分中心

Earth Engineering Center of Columbia University ---- China Center
(www.wtert.cn)



29.



重庆垃圾焚烧发电技术研究院



- **CWTERT researched the design of WTE power generation system.**
- **We advanced the technology progress of WTE in China.**
- **We have established the base of production, teaching and research in western China**

30.



重庆垃圾焚烧发电技术研究院



重庆垃圾焚烧发电技术研究院