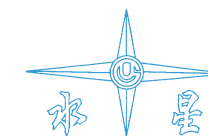




共建清洁低碳生活
行稳致远·匠心超越

Building A Clean and Low-Carbon Life Together
Achieve long-term development with prudent operation and surpass
through ingenuity



华光环能垃圾焚烧锅炉

| 技术与产品 |

WHEE Waste Incineration Boiler Technology & Product Brochure

无锡华光环保能源集团股份有限公司
WUXI HUAGUANG ENVIRONMENT & ENERGY GROUP CO., LTD.



燃气轮机余热锅炉
HRSG



垃圾焚烧锅炉
WTE Boiler



燃气锅炉
Gas Boiler



生物质锅炉
Biomass Boiler



循环流化床锅炉
CFB Boiler



污泥炉 / 污泥干化机
Sludge Boiler/Sludge Dryer



煤粉锅炉
PC Boiler



工程总包 (传统项目)
EPC project(traditional energy)



工程总包 (光伏)
EPC project (photovoltaic)



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Tel: 13814287571



华光环能成立于 1958 年，前身为无锡锅炉厂，2000 年完成股份制改造，2003 年在上海证券交易所挂牌上市（股票代码 600475），2017 年完成重大资产重组。2020 年更名为“无锡华光环能资源集团股份有限公司”。

华光是江苏省首家既完成资产重组又实现员工持股和股权激励的大型国有控股上市公司。形成了“能源与环保领域的产业投资运营平台”的功

能定位，以“共建清洁低碳生活”为企业使命，以“诚信、责任、专业、超越”为公司核心价值观，确立了成为“中国领先的环保能源综合服务商”的发展愿景。

公司是中国机械五百强、中国机械工业百强、中国分布式能源企业百强、中国工业行业排头兵企业。装备板块主营新能源类和传统能源类锅炉装备及总包：

- ◆ **传统能源类锅炉：**节能环保型燃煤锅炉（CFB+PC）。
- ◆ **新能源类锅炉：**零碳生物质发电锅炉、减碳固废发电锅炉。
- ◆ **清洁能源类锅炉：**低碳燃气—蒸汽联合循环余热锅炉（HRSG）。

截至目前累计研制投运环保发电装备达到近五千台套，分布国内各省，以及海外 38 个国家和地区。

WHEE (formerly Wuxi Huaguang Boiler Co., Ltd. 2000-2020) was known as Wuxi Boiler Works when established in 1958. We completed our shareholding reform in 2000, listed on Shanghai Stock Exchange in 2003 (SH. 600475), and completed major asset restructuring in 2017. We altered our name to "Wuxi Huaguang Environment & Energy Group Co., Ltd." in 2020.

WHEE is the first large state-owned listed company in Jiangsu Province to complete asset restructuring and realize employee stock ownership and equity incentive. We have formed the functional orientation of "industrial investment and operation platform in the field of energy and environmental protection". With "jointly building a clean and low-carbon life" as the corporate mission and "integrity, responsibility, professionalism and transcendence" as the company's core values, we establishes the development vision of becoming "China's leading comprehensive environmental protection and energy service provider".

WHEE have been awarded the titles of one of China's top 500 machinery enterprises, China's top 100 machinery industry enterprises, China's top 100 distributed energy enterprises and the leading enterprise of Chinese industry. Our equipment business sector is mainly engaged in design, manufacture supply and EPC of the boiler products in term of both new energy and traditional energy:

- ◆ **Traditional energy boilers:** energy-saving and environment-friendly coal-fired boilers (CFB + PC).
- ◆ **New energy boilers:** Zero Carbon biomass power generation boiler, carbon reduction solid waste power generation boiler.
- ◆ **Clean energy boiler:** low carbon gas steam combined cycle HRSG.

Up to now, nearly 5000 sets of environmental protection power equipment have been developed and put into operation, which are distributed in all provinces in China and 38 countries and regions overseas.

01 华光环能产品简介 WHEE Product Introduction

公司拥有全球领先的特种锅炉生产、检测、探伤设备仪器累计 2200 余台套，具备年产 3 万蒸吨产能，年产汽包数量全球第一。

WHEE owns the world's leading manufacturing, testing, flaw detection equipment and instruments of totaling 2,200 sets, with an annual production capacity of 30,000 t/h and the world's largest in the number of drums produced annually.

一、燃气轮机联合循环余热锅炉 Heat Recovery Steam Generator	同时拥有 B-H，卧式、立式 HRSG 技术，与 JC 业绩共享。 承担北京 5 个煤改气项目中的 4 个。 提供定制化的设备和服务，在世界范围内有近 700 台燃机余热锅炉业绩。 WHEE owns B-H, horizontal and vertical HRSG technology, sharing its performance with JC. Undertook 4 out of 5 coal-to-gas projects in Beijing. Provide customized design and services. Nearly 700 gas turbine waste heat boilers manufactured by WHEE are running worldwide.
二、循环流化床锅炉 Circulating Fluidized Bed Boiler	35t/h(6MW) ~ 480t/h(150MW) 循环流化床锅炉系列。 480t/h(150MW) ~ 745t/h(220MW) 超高压再热循环流化床锅炉系列。 745t/h(220MW) ~ 1142t/h(325MW) 亚临界再热循环流化床锅炉系列。 35t / h (6MW) - 480t / h (150MW) circulating fluidized bed boiler. 480t / h (150MW) - 745t / h (220MW) ultra-high pressure reheat circulating fluidized bed boiler. 745t / h (220MW) ~ 1142t / h (325MW) subcritical reheat circulating fluidized bed boiler.
三、煤粉锅炉 Pulverized Coal Boiler	75t/h(12MW) ~ 1217t/h(350MW) 中压、高压、超高压、亚临界煤粉锅炉系列。 75t / h (12MW) - 1217t / h (350MW) medium pressure, high pressure, ultra-high pressure and subcritical pulverized coal boiler.
四、生物质能发电锅炉 Biomass Energy Power Generation Boiler	开发了多种容量，不同参数的生物质能锅炉，燃料包括农作物秸秆、木本植物、稻壳、废木柴、建筑木板、废弃家具、锯木粉、砂光粉、糠醛渣、药渣、咖啡渣、甘蔗渣、棕榈壳、空果串、生物质造粒等。35t/h(6MW) ~ 150t/h(35MW) 中压、次高压、高压、超高压再热生物质能锅炉。 Biomass boilers with various capacities and parameters have been developed, burning natural fuels including crop straw, woody plants, rice husk, waste firewood, construction plank, waste furniture, sawdust, sanding powder, furfural residue, drug residue, coffee residue, bagasse, palm shell, empty fruit string, biomass granulation, etc. 35t/h (6MW) - 150t/h (35MW) medium pressure, sub-high pressure, high pressure and ultra-high pressure reheat biomass boiler.

五、垃圾焚烧发电锅炉 Waste Incineration Power Generation Boiler	形成了引进日立造船 L 型全系列、自主研发华光炉排全系列顺推式往复炉排和循环流化床等垃圾焚烧发电锅炉产品。 100t/d ~ 1000t/d 垃圾焚烧锅炉系列。 Different types of waste incineration boiler products have been formed, including the licenced Hitachi Shipbuilding L-type, independent developed smooth-push type reciprocating grate and CFB type with IP rights. 100t/d ~ 1000t/d waste incineration boiler series.
六、燃气锅炉 Gas Fired Boiler	燃用各类可燃气体，如天然气、高炉煤气、焦炉煤气、兰炭尾气、丙烷气及各类化工尾气等；油类燃料，如轻油、重油等。 容量范围 10-670t/h 压力参数：1.3MPa-18.7MPa Capable of applying various types of combustible gases, such as natural gas, blast furnace gas, coke oven gas, blue carbon exhaust, propane gas and various types of chemical tail gas, etc.; oil fuels, such as light oil, heavy oil, etc. Capacity range 10-670t/h Pressure parameter: 1.3MPa-18.7MPa



02 华光垃圾焚烧锅炉四大特点 Four Major Features of WHEE Waste Incineration Boiler



- ◆ 技术三阶段发展领先
 引进→二次创新→自主研发
 • WHEE technology takes the lead by three steps
Technology introduction-Secondary innovation-Independent research and development



- ◆ 国内业绩最多（截至 2022.6）
511 台套
 • Maximum domestic performance (till June, 2022)
511sets



- ◆ 承担了当时国内首台最大处理量的垃圾余热炉（1000t/d）
2020 年中节能保定项目
 • Undertook domestic first waste-to energy boiler with max capacity (1000t/d) by then.
Baoding project in CECEP, 2020



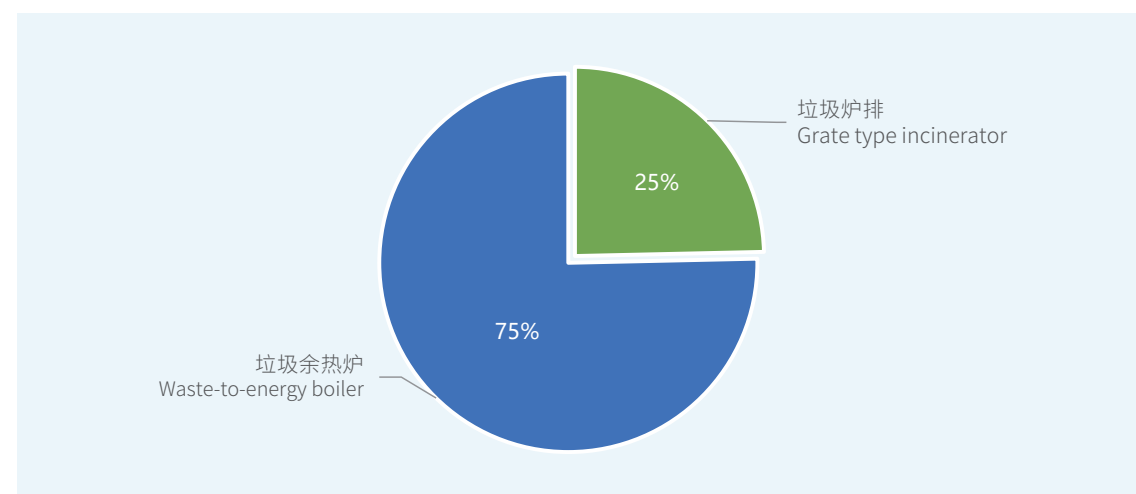
- ◆ 垃圾炉排和余热炉都能实现厂内研发制造，一体化供货
自主知识产权华光炉排
 • WHEE is capable of independently R&D and manufacturing waste incinerators and waste-to-energy boilers and realize integrated supply.
Self-developed Huaguan-IP grate

03 垃圾焚烧锅炉（余热炉 + 炉排）订单业绩 Performance of Waste Incineration Boiler(waste-to-energy boiler+grate type incinerator)

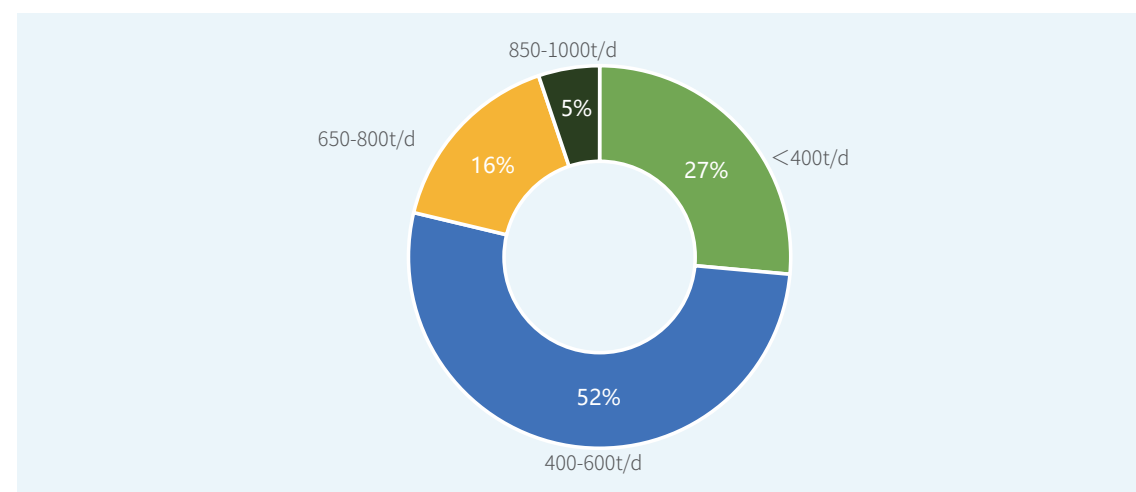
截止至 2022 年 6 月公司垃圾焚烧炉产品订单 511 台套。

Sales performance of waste incineration boilers is up to 511 sets by June,2022.

◎ 垃圾焚烧锅炉订单类型占比（垃圾炉排 + 垃圾余热炉） Order Categories of Waste Incineration Boilers (waste-to-energy boiler+grate-type incinerator)



◎ 各等级垃圾焚烧锅炉订单占比 Order Categories of Waste Incineration with Different Treatment Parements



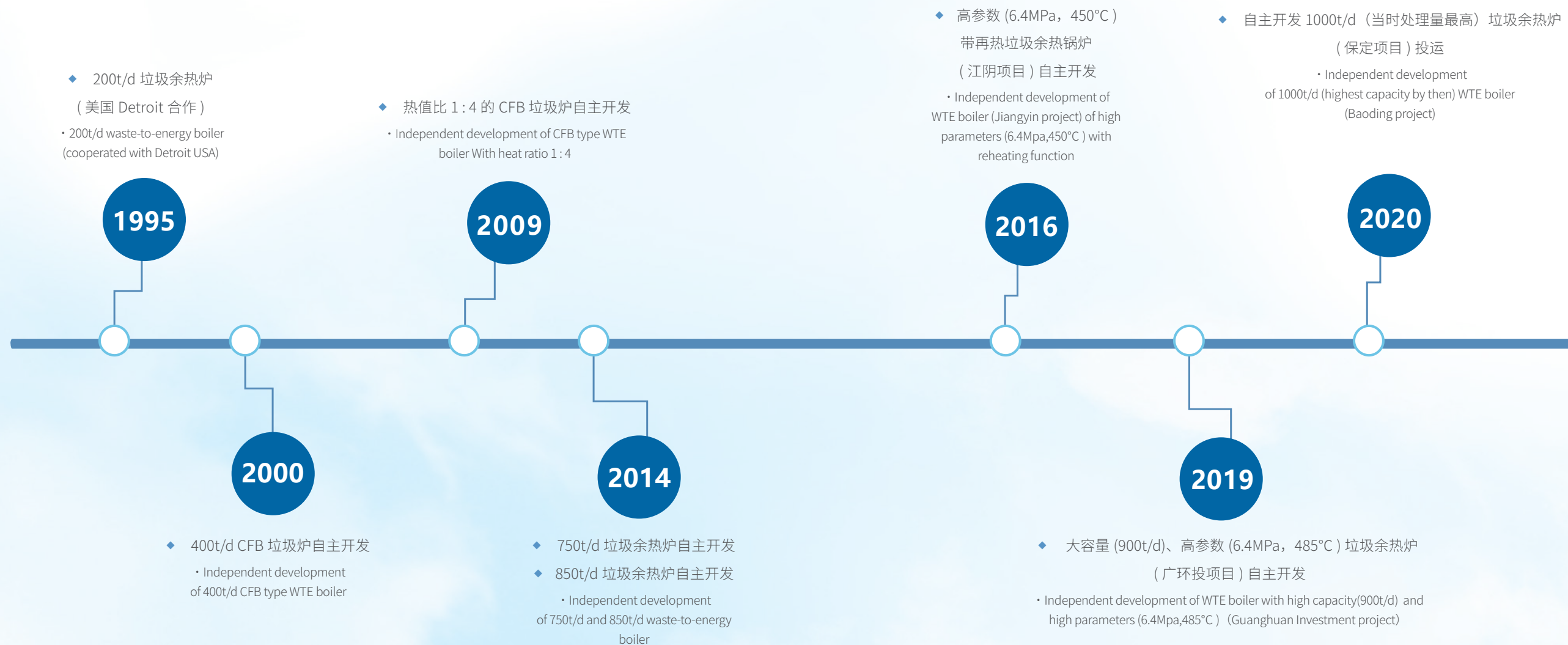
04 华光环能垃圾焚烧锅炉产品研发历程 Research and Development Process of WHEE's Waste Incineration Boiler

◎ 垃圾炉排 Grate-type Waste Incinerator



04 华光环能垃圾焚烧锅炉产品研发历程 Research and Development Process of WHEE's Waste Incineration Boiler

◎ 垃圾余热炉 Waste-to-energy (WTE) Boiler



05 产品分类一：垃圾炉排篇 Category I : Grate Type Waste Incinerator

◎ 垃圾炉排技术发展趋势 Technology Development of Grate Type Waste Incinerator

□ 产品阶段一：国际先进技术引进 | Stage I : Advanced International Technology Introduction



2009年6月引进日本日立造船株式会社
L型垃圾焚烧（200~600t/d）全系列往复式炉排技术
Introduction of reciprocating grate technology of L-type full-series waste incinerator from Hitachi Japan, July, 2009

◆ 日立造船垃圾焚烧示范项目——Waste incineration project of Hitz



台北投垃圾处理厂 2×450t/d 垃圾焚烧锅炉
世界首台完成 8000 小时连续运行
2×450t/d waste incineration boiler for Beitou, Taipei waste treatment plant
The world first boiler that has completed 8000 hours continuous running running in the world



大阪舞州垃圾处理厂 2×450t/d 垃圾焚烧锅炉
去工业化的经典项目
2×450t/d waste incineration boiler for Wuzhou, OSAKA waste treatment plant
Typical project of de-industrialization

□ 产品阶段二：引进技术再创新 | Stage II : Secondary Innovation

◆ 创新特点 1:

- 减容、减重和无害化处理，兼顾热能的回收利用。

◆ 创新特点 2:

- 焚烧工艺先进，控制 SO₂、HCl、NO_x、重金属和有害性微量有机物的排放。

◆ 创新特点 3:

- 焚烧技术集成度高、自动化程度高、管理保障度高，防止二次污染。

◆ Feature 1

- Size and weight reduction, harmless disposal, and heat recycling.

◆ Feature 2

- Advanced incineration technology, strict control on the emissions of SO₂、HCl、NO_x、heavy metals and harmful trace organic matter.

◆ Feature 3

- High integration, high automation, and high management assurance on the incineration technology, effective on preventing secondary pollution.

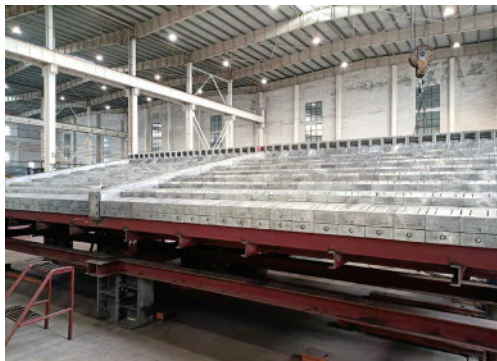
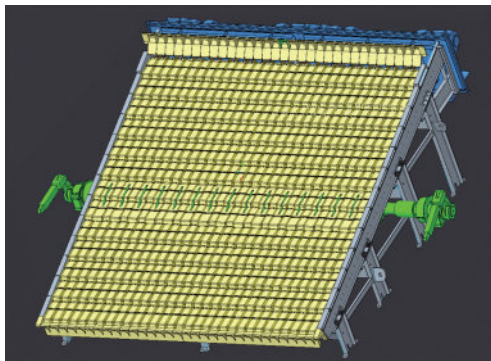


惠联 2×850 t/d 炉排垃圾焚烧炉项目
2×850 t/d waste incinerator project in Huilian

□ 产品阶段三：自主知识产权“华光炉排” | Stage III: Technology of Independent IP: “Huaguang Grate”

自主研发华光垃圾焚烧炉排吸收了国内主流垃圾焚烧炉排产品的优点，结合自己的经验于 2018 年底开发而成，同时申请了两项专利，拥有完全的知识产权。在此基础上于 2020 年底完成了燃烧炉排模块的试制。

Self-developed Huaguang Grate has absorbed the major advantages of domestic mainstream grate-type waste incinerator, combining with our own experiences, and has finally been worked out in 2018, which has applied two patents in the name of WHEE. WHEE has completed the trial manufacture of grate by 2020.



◆ 华光自主研发大型垃圾焚烧炉排，结构稳定、适应性强

- (ZL201811182434.2 一种大型垃圾焚烧炉排；ZL201811182428.7 一种大型垃圾焚烧炉)

◆ 自主研发炉排的产业化取得市场突破

- (2021 年 7 月底获得 650t/d 垃圾焚烧炉排 + 余热炉订单。2022 年 2 月底完成共 6 组炉排模块的公司内组装并发货。)

◆ 开发水冷固废（垃圾）焚烧炉排

- (申请发明专利，预计 2022 年年底推出试验样机)

◆ Self-developed Huaguang Grate of large scale has more stable structure and higher adaptability.

- (ZL20181182434.2 One type of large-scale incineration grate; ZL20181182428.7 One type of large-scale waste-to-energy boiler)

◆ Huaguang Grate has achieved marketing breakthrough in industrialization.

- (Won the order of 650t/d grate incinerator+waste-to-energy boiler in July,2021. Six sets of modules have been assembled in plant and delivered by the end of February, 2022)

◆ Develop Water - cooled solid waste (garbage) incineration grate

- (Applied patents of invention, expect to launch test prototype by the end of 2022)

◎ 垃圾炉排典型项目清单 Typical Projects of Grate Type Waste Incinerator

项目名称 Project Name	单台处理量 Disposal Capacities	技术类型 Technology Categories	备注 Remarks
北京京环绿谷环境管理有限公司 Beijing Jinghuan Green Valley Environmental Management Co., Ltd.	300t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
宝坻区生活垃圾焚烧发电厂 Municipal solid waste incineration project in Baodi	350t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
襄阳三期生活垃圾焚烧项目 Municipal solid waste incineration project III in Xiangyang	400t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（蔚县）环保能源有限公司 CECEP Environment & Energy Co., Ltd project(Yuxian)	450t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
成都市兴蓉隆丰环保发电有限公司 Xingrong environmental protection power generation project in Chengdu	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
黑龙江省肇东市生活垃圾焚烧发电厂项目 Municipal solid waste power generating project in Zhaodong、Heilongjiang	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（北京）节能环保工程有限公司 / 平顶山 CECEP Energy Conservation and Environmental Protection project (BEIJING)/Pingdingshan	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（北京）节能环保工程有限公司 / 毕节 CECEP Energy Conservation and Environmental Protection project (BEIJING)/Bijie	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（北京）节能环保工程有限公司 / 衡水 CECEP Energy Conservation and Environmental Protection project (BEIJING)/Henshui	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
建德浦发热能电源有限公司 Jiande Pufa Themo Generation project	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（蠡县）环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Lixian)	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（昌乐）环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Changle)	500t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology

项目名称 Project Name	单台处理量 Disposal Capacities	技术类型 Technology Categories	备注 Remarks
中节能（涑水）环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Laishui)	550t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
承德环能热电有限责任公司 Chengde environmental protection and themo power project	550t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
赵县垃圾焚烧发电项目 Zhaoxian waste incineration power generation project	600t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能天水循环产业园项目 CECEP Tianshui circular industrial park project	600t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能抚州市生活垃圾焚烧发电项目 CECEP Fuzhou waste incineration power generation project	600t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
中节能（大城）环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Dacheng)	600t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术 Introduced technology
株洲市金利亚环保科技有限公司 Jinliya environmental protection and technology project in Zhuzhou	650t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术再创新 Secondary innovation
中节能（车里）环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Cheli)	750t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术再创新 Secondary innovation
无锡惠联垃圾热电有限公司 Wuxi Huilian Waste Thermoelectricity project	850t/d	日立造船 L 型炉排 L-type grate, Hitz	引进技术再创新 Secondary innovation
河北锦宝石循环资源开发集团有限公司 Hebei Jinbaoshi circular resource development project	650t/d	华光炉排 Huaguan Grate	自主研发技术 Independent R&D technology

◎ 垃圾炉排专利清单 Patent List of Grate Type Waste Incinerator

序号 No.	专利号 Patent No.	专利名称 Patent Name	专利类型 Patent Type	专利权人 Patentee
1	ZL201010200534.0	垃圾焚烧锅炉炉排梁的安装调节装置 Mounting and adjusting device of waste incinerator grate beam	发明专利 Patent for invention	华光环能 WHEE
2	ZL201210042055.X	垃圾焚烧锅炉的炉排推杆的柔性密封装置 Flexible sealing device for grate push rod on waste incinerator	发明专利 Patent for invention	华光环能 WHEE
3	ZL201210042059.8	垃圾焚烧锅炉炉排的螺旋出渣装置 Screw de-slagging device of waste incinerator	发明专利 Patent for invention	华光环能 WHEE

序号 No.	专利号 Patent No.	专利名称 Patent Name	专利类型 Patent Type	专利权人 Patentee
4	ZL201520139299.9	垃圾焚烧炉炉排冷却系统 Cooling system of waste incinerator	实用新型 utility model patent	华光环能 WHEE
5	ZL201821646949.9	大型垃圾焚烧炉排 Large-scale waste incinerator	实用新型 utility model patent	华光环能 WHEE
6	ZL201920943155.7	一种垃圾焚烧锅炉炉排密封结构 Sealing structure of a waste incinerator	实用新型 utility model patent	华光环能 WHEE
7	ZL201921658616.2	炉排垃圾焚烧炉的二次风布置结构 Secondary air layout of waste incinerator	实用新型 utility model patent	华光环能 WHEE
8	ZL201922307387.6	用于往复炉排推杆穿墙处的密封结构 Sealing structure of push rod through the wall in reciprocating-grate	实用新型 utility model patent	华光环能 WHEE
9	ZL2021221495692	一种大跨度垃圾焚烧炉炉排支撑梁结构 One type of support beam structure of a large- span waste incinerator	实用新型 utility model patent	华光环能 WHEE
10	ZL2020212371588	一种控制锅炉排烟温度的布置结构 One special layout to control exhaust gas temperature from boiler	实用新型 utility model patent	华光环能 WHEE



06 产品分类二：垃圾余热炉篇 Category II : Waste-to-energy (WTE) Boiler

◎ 垃圾余热炉技术发展趋势 Technology Development of WHEE's Waste-to-Energy Boiler



大容量
Large capacity

高参数
High parameter

带再热
With reheat function

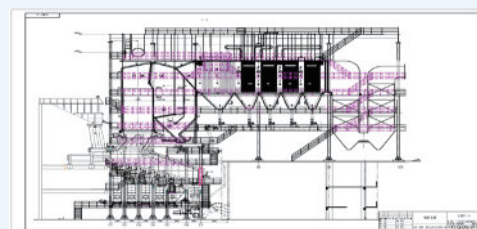


◆ 保定 1000t/d 垃圾焚烧余热锅炉

- 额定蒸发量：106t/h
- 额定蒸汽压力：5.3MPa
- 额定蒸汽温度：430℃
- 垃圾处理量：1000t/d
- 垃圾低位热值：1850KCal/kg

◆ 1000t/d Waste-to-energy boiler in Baoding

- Rated evaporation: 106t/h
- Rated steam pressure: 5.3MPa
- Rated steam temperature: 430℃
- Disposal capacity: 1000t/d
- Low caloric value of waste: 1850Kcal/kg



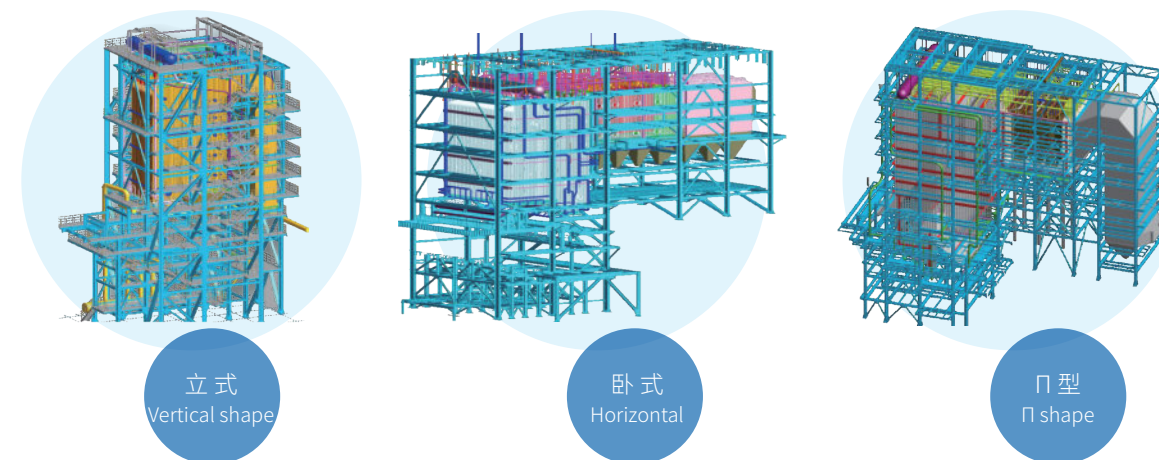
◆ 江阴光大：国际首个 500t/d 带再热垃圾焚烧余热锅炉项目

- 日处理垃圾：500t/d
- 蒸汽压力：6.4MPa
- 蒸汽温度：450℃
- 垃圾热值：1800KCal/kg
- 再热进汽温度：262℃
- 再热出汽温度：430℃
- 再热蒸汽压力：1.37MPa
- 再热蒸汽流量：37t/h

◆ Guangda Jiangyin: 500t/d reheat waste-to-energy boiler

- Daily waste disposal capacity: 500t/d
- Steam pressure: 6.4MPa
- Steam temperature: 450℃
- Waste caloric value: 1800 KCal/kg
- Reheat steam inlet temperature: 262℃
- Reheat steam outlet temperature: 262℃
- Reheat steam pressure: 1.37MPa
- Reheat steam flow: 37t/h

◎ 垃圾余热炉三大炉型结构及技术特点 Three shapes of waste-to-energy boilers and their technology features



□ 华光环能垃圾焚烧余热炉技术特点 | Technology features of waste-to-energy boiler

◆ 1、燃料适应性广

- 可燃用热值 1000-2500kcal/kg
- 富裕的受热面
- 耐火材料：浇筑 + 活动铺设
- 满足燃烧负荷变化匹配的一二次风温和风量
- 空冷墙结构
- 多种水冷炉膛结构

◆ 1、Fuel adaption (wide)

- Combustible Calorific Value: 1000-2500kcal/kg
- Sufficient heating surface
- Fireproofing material: castable + mobile laying
- Primary & secondary air amount and temperature matching constant combustion load change
- Air cooling wall structure
- Various water-cooled furnace structures

◆ 2、换热效率高

- 合理设计前、后拱，保证垃圾的及时燃烧及燃烧时间，降低热灼减率。
- 足够的对流受热面，保证较低的排烟温度，降低排烟热损失。
- 可靠的炉墙及保温措施，减少锅炉墙体的散热损失。
- 清灰形式和布置位置，确保对流受热面的高效换热。

◆ 2、Heat exchange efficiency (high)

- Rational designed front & back arch to guarantee the in-time combustion and sufficient burning time, and minimizing the ignition loss.
- Sufficient convective heating surface to reach lower exhaust gas temperature and reduce the heat loss due to exhaust gas.
- Reliable furnace wall and insulation measures to reduce the heat dissipation loss of furnace wall.
- The soot-cleaning form and the layout to ensure the efficient heat transfer of convective heating surface.

□ 华光环能垃圾焚烧余热炉技术特点 | Technology features of waste-to-energy boiler

◆ 3、稳定、可靠性强	◆ 3、Stability & reliability (strong)
- 炉膛水冷壁高温腐蚀解决方案 - 高温过热器的防腐解决方案 - 省煤器低温腐蚀解决方案 - 尾部受热面防结焦措施 - 合理的结构设计 - 制造工艺质量控制措施	- Solution to high temperature corrosion of furnace water wall. - Preservative solution of the high temperature super-heater. - Solution to low temperature corrosion of economizer. - Anti-coking measures for tail heating surface. - Reasonable structure design. - Measures to improve the manufacturing process quality.

◎ 垃圾余热炉三大炉型结构典型项目 | Typical projects of three types of waste-to-energy boilers

□ 典型用户 | Technology features of waste-to-energy boiler

立 式 Vertical shape	- 福建红庙岭 2×600 t/d 垃圾焚烧余热锅炉 - 泰国普吉岛 2×350 t/d 垃圾焚烧余热锅炉 - 江苏沭阳 2×300 t/d 垃圾焚烧余热锅炉	2×600t/d waste-to-energy boilers in Hongmiaoling, Fujian 2×350t/d waste-to-energy boilers in Phuket, Thailand 2×300t/d waste-to-energy boilers in Shuyang, Jiangsu
卧 式 Horizontal shape	- 北京高安屯 2×800 t/d 垃圾焚烧余热锅炉 - 长沙军信 4×750 t/d 垃圾焚烧余热锅炉 - 苏州吴江 2×750 t/d 垃圾焚烧余热锅炉	2×800t/d waste-to-energy boilers in Gaoantun, Beijing 4×750t/d waste-to-energy boilers in Changsha, Junxing 2×750t/d waste-to-energy boilers in Wujiang, Suzhou
Π 型 Π shape	- 长沙军信 6×850 t/d 垃圾焚烧余热锅炉 - 广环投 10×900 t/d 垃圾焚烧余热锅炉 - 中节能保定 1×1000 t/d 垃圾焚烧余热锅炉	6×850t/d waste-to-energy boilers in Changsha, Junxing 10×900t/d waste-to-energy boilers in Guangzhou 1×1000t/d incinerate boiler in Baoding, CECEP



江苏沭阳 300 t/d 项目
 300t/d project Shuyang, Jiangsu



高安屯 800 t/d 项目
 800t/d project Gaoantun, Beijing



广环投 900 t/d 项目
 900t/d project, Guangzhou

◎ 垃圾余热炉典型项目清单 | Typical Projects of WTE Boiler

项目名称 Project Names	单台处理量 Disposal Capacities	炉排类型 Matching Grate Type	备注 Remarks
睢宁垃圾焚烧发电项目 Waste-to-energy power generation project in Suining	350t/d	三峰马丁炉排 Sanfen Martens' grate	
临夏鹭鸿环保电力有限公司 Luhong environment protection power generation project in Linxia	400t/d	江苏天楹炉排 Jiangsu Tianying Grate	
中节能 (莱西) 环保能源有限公司 CECEP (Laixi) Environment & Energy Co., Ltd project	450t/d	日立造船 L 型炉排 L form grate from Hitz	引进技术 Introduced technology
中节能 (肥西) 环保能源有限公司 CECEP (Feixi) Environment & Energy Co., Ltd project	500t/d	德巴炉排 Deba grate	
光大城乡再生能源 (淮安) 有限公司 Ever Bright Regeneration Energy (Huaian) Co.,Ltd project	500t/d	光大炉排 Everbright grate	
中节能 (昌乐) 环保能源有限公司 CECEP (Changle) Environment & Energy Co., Ltd project	500t/d	日立造船 L 型炉排 L form grate from Hitz	引进技术 Introduced technology
中节能承德环能热电有限责任公司 CECEP Chengde Environment & Thermoelectricity Co.Ltd project	550t/d	日立造船 L 型炉排 L form grate from Hitz	引进技术 Introduced technology
昌黎垃圾焚烧发电项目 Changli waste incineration power generation project	600t/d	伟明炉排 Weiming grate	
中节能 (汉中) 环保能源有限公司 CECEP (Hanzhong) Environment & Energy Co., Ltd project	650t/d	日立造船 L 型炉排 L form grate from Hitz	引进技术扩展 Secondary innovation
株洲市金利亚环保科技有限公司 Jinliya Environmental Protection Technology Co., Ltd project in Zhuzhou	650t/d	日立造船 L 型炉排 L form grate from Hitz	引进技术扩展 Secondary innovation
深圳市妈湾城市能源生态园项目 Mawan Urban Ecological Park Project in Shenzheng	750t/d	西格斯炉排 Seghers grate	
中节能 (临沂) 环保能源有限公司兰山分公司 CECEP (Linyi) Environment & Energy Co., Ltd project of Lanshan Branch	750t/d	康恒炉排 Kangheng grate	
光大环保能源 (无锡) 有限公司 Ever Bright environment (Wuxi)Co.Ltd	750t/d	光大炉排 Everbright grate	
光大环保 (中国) 有限公司 / 信阳市生活垃圾焚烧发电项目 Ever Bright Xinyang wste incineration power generation project	750t/d	光大炉排 Everbright grate	
中节能 (天津) 环保能源有限公司 CECEP Environment & Energy Co., Ltd project (Tianjin)	800t/d	日立造船 R 型炉排 R form grate from Hitz	
中节能 (沧州) 环保能源有限公司 CECEP (Cangzhou)Environment & Energy Co., Ltd project	800t/d	康恒炉排 Kangheng grate	

序号 No.	专利号 Patent No.	专利名称 Patent Name	专利类型 Patent Type	专利权人 Patentee
12	ZL201621054805.5	垃圾焚烧锅炉推料器的同步控制装置 Synchronization control system of waste-to-energy boiler's stoker	实用新型 Utility model patent	华光环能 WHEE
13	ZL201821646934.2	大型垃圾焚烧炉 Large-scale waste-to-energy boiler	实用新型 Utility model patent	华光环能 WHEE
14	ZL201821899792.0	卧式垃圾余热锅炉省煤器管屏间烟气挡板结构 Flue gas damp structure between economizer platens on horizontal WTE boiler	实用新型 Utility model patent	华光环能 WHEE
15	ZL202021198608.7	立式垃圾炉省煤器管系固定及清灰结构 Tube fixture and soot cleaning of the vertical type waste-to-energy boiler's economizer	实用新型 Utility model patent	华光环能 WHEE
16	ZL202021213664.3	锅炉与焚烧炉之间柔性密封结构 Flexible sealing structure between boiler and incinerator	实用新型 Utility model patent	华光环能 WHEE
17	ZL202021215062.1	高参数垃圾余热炉蒸发器给水系统的新型布置结构 A new layout structure of high parameter waste-to-energy boiler's evaporator	实用新型 Utility model patent	华光环能 WHEE
18	ZL202020394886.3	一种卧式垃圾锅炉钢架的内框架抗侧移结构 An internal lateral stiffness structure for the steel frame of horizontal waste-to-energy boiler	实用新型 Utility model patent	华光环能 WHEE
19	ZL202020346770.2	一种立式垃圾炉受热面耐磨结构 One type of anti-corrosion structure of vertical waste-to-energy boiler	实用新型 Utility model patent	华光环能 WHEE
20	ZL2021214529590	带外置过热器提高主汽参数的垃圾余热锅炉 Waste-to-energy boiler with external super-heater to increase main steam parameter	实用新型 Utility model patent	华光环能 WHEE

序号 No.	专利号 Patent No.	专利名称 Patent Name	专利类型 Patent Type	专利权人 Patentee
1	ZL201110136926.X	用于垃圾焚烧余热锅炉的直接式空气预热器 One direct-type air preheater for waste-to-energy boiler	发明专利 Patent for invention	华光环能 WHEE
2	ZL201110221692.9	垃圾焚烧锅炉 waste-to-energy boiler	发明专利 Patent for invention	华光环能 WHEE
3	ZL201110060609.4	垃圾焚烧锅炉的烟气空气预热器 Flue gas air preheater for waste incineration boiler	发明专利 Patent for invention	华光环能 WHEE
4	ZL201210149242.8	炉内放灰装置 furnace de-dusting device	发明专利 Patent for invention	华光环能 WHEE
5	ZL201310120792.1	一种垃圾焚烧锅炉的省煤器结构 Economizer structure for waste-to-energy boiler	发明专利 Patent for invention	华光环能 WHEE
6	ZL201410382131.0	一种垃圾焚烧锅炉的烟气挡板结构 Flue damper structure for waste-to-energy boiler	发明专利 Patent for invention	华光环能 WHEE
7	ZL201410382186.1	一种卧式垃圾余热锅炉水冷屏导向止晃结构 stopper structure for water-cooled panel applied in horizontal waste-to-energy boiler	发明专利 Patent for invention	华光环能 WHEE
8	ZL201510107877.5	一种过热器蛇形管系吊杆装置 One type of super heater coil tube suspender device	发明专利 Patent for invention	华光环能 WHEE
9	ZL201610466161.9	一种带再热的高参数垃圾焚烧锅炉 High parameter waste-to-energy boiler with reheat device	发明专利 Patent for invention	华光环能 WHEE
10	ZL201320333462.6	一种垃圾渗滤液喷燃装置 A waste leachate injection device	实用新型 Utility model patent	华光环能 WHEE
11	ZL201620633484.8	垃圾焚烧锅炉再热器的减温结构 A cooling structure for waste-to-energy boiler reheater	实用新型 Utility model patent	华光环能 WHEE



07 合作伙伴 Partnership

华光与国内知名的垃圾焚烧投资运营商中国节能、上海环境、北京环卫、光大环保、深圳能源、伟明环保、成都环境、上海浦发等有广泛的合作。

WHEE has developed extensive collaboration with domestic-renowned waste-to-energy investment operator, including: CECEP, Shanghai Environmental Group, Everbright Environment, Shenzhen Energy, Weiming Environment, Chengdu Environment, Shanghai Pufa Environmental Protection.etc.



华光与国内外知名的焚烧炉厂家，包括西格斯、三菱马丁、日立、田熊、光大、伟明开展了广泛合作。

WHEE conducts extensive collaboration with world-renowned incinerator manufacturers, including TUX, MITSUBISHI, Hitz, TAGUMA, Everbright Environment, Weiming.



08 典型项目 Typical Projects



长沙军信 6 台 850t/d 垃圾焚烧余热炉 (2017 年投运)
 Changsha Junxin 6 sets of 850t/d waste incineration boiler (commissioned in 2017)



光大环保能源（无锡）有限公司 4×750t/d 垃圾焚烧余热炉 (2021 年投运)
 Everbright Environmental Energy (Wuxi) Co., Ltd. 4×750t/d waste-to-energy boiler project (commissioned in 2021)



光大江阴：当时国际首个 500t/d 高参数带再热垃圾炉项目（2018 年投运）
 Everbright Jiangyin: The world's first 500t/d high-parameter waste incineration boiler (with reheat function) project (commissioned in 2018)



中节能保定 1000t/d 垃圾焚烧锅炉项目（当时亚洲投运项目中日处理量最大）（2020 年投运）
 CECEP Baoding 1000t/d waste incineration boiler project (the largest daily disposal capacity among the projects in operation in Asia by then) (commissioned in 2020)



深能源宝安三期 5×850t/d 垃圾焚烧锅炉项目（2018 年投运）
 Shenzhen Energy Baoan Phase III 5×850t/d Waste Incineration Boiler Project (commissioned in 2018)



光大广环投环保能源（肇庆）有限公司 2 台 750t 垃圾炉（2020 年投运）
 Everbright Guanghuan Investment Environmental Protection Energy (Zhaoqing) Co., Ltd. 2 sets of 750t/d waste incineration boiler project (commissioned in 2020)



光大环保(中国)有限公司 / 佛山市生活垃圾资源化利用提质改造项目 4 台 750t/d 垃圾炉 (2022 年投运)
Everbright Environmental Protection (China) Co., Ltd./Foshan Municipal Solid Waste Recycling and Performance Improvement Project 4 sets of 750t/d waste incineration boiler project (commissioned in 2022)

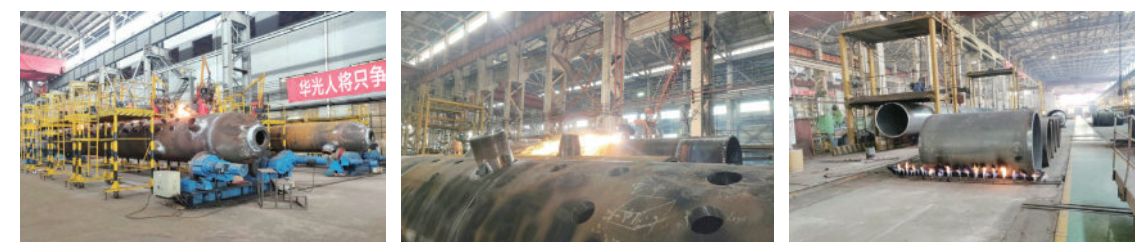


越南芹苴 400t/d 垃圾焚烧锅炉项目, 2019 年投运; 助力当地环保效益, 在中央电视台播报
The 400t/d waste incineration boiler project in Can Tho, Vietnam, put into operation in 2019;
Benefits local environmental protection progress, broadcast on CCTV

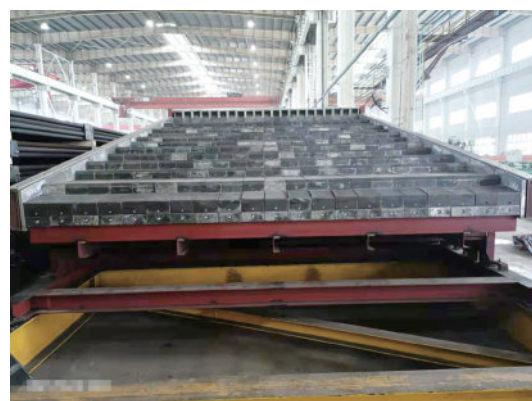
◎厂内余热炉制造照片 Photos of Waste-to-energy Manufacturing in Plant

华光是国内少数几家兼具垃圾炉排和余热炉厂内研制能力的企业。

WHEE is one of the few enterprises in China that has the capability of in-house research and development of both grate incinerator and WTE boiler.



© 厂内炉排制造照片 Photos of Waste Incinerator Manufacturing in Plant



09

企业战略及文化 Corporate Strategy & Culture

品牌定位

Brand Positioning

为全球提供绿色动能
 Provide green energy for the world

企业使命

Corporate Mission

共建清洁低碳生活
 Building a clean and low-carbon life together

发展愿景

Development Vision

全球领先的环保能源领域系统解决方案服务商
 Becoming world's leading comprehensive service provider in the field of environmental protection and energy utilization

核心价值观

Core Values

诚信·责任·专业·超越
 Integrity, responsibility, professionalism and transcendence

企业精神

Enterprise Spirit

务实创新·团结拼搏
 Pragmatic innovation, unity and hard-working

经营理念

Business Philosophy

产品服务让用户满意，企业发展让股东满意，工作氛围让员工满意，公共责任让社会满意。
 Products and services to customers' satisfaction, enterprise development to shareholders' satisfaction,
 working atmosphere to staff satisfaction, and public responsibilities to society's satisfaction.

10 研发制造能力篇 R & D and Manufacturing Capabilities

□ 研发 & 制造能力 | R&D and manufacture capacity



200+ 名
 拥有性能,标准,受热面,钢结构,工艺等专业的 200 多名工程师。
200+ Engineers
 specialized in performance, standard, heating surface design, steel structure design, processing technology, etc.





+90%
 采用参数化定制设计,设计出图效率提升 90%,可视化模拟安装现场,保障安装可靠性。
+90%
 Design efficiency Tailor designed for client, the design efficiency increased by 90%, Visual simulation of erection procedure to ensure the reliability of Erection.



10000m²
 10000 平米的厂房,专为余热锅炉模块组装新建。
10000 m²
 workshop Specially built for the assembly of HRSG modules.

□ 研发 & 制造能力 | R&D and manufacture capacity



9 大体系 9 Systems



◆ ASME 体系	· ASME
◆ 质量管理体系	· Quality management system
◆ 环境管理体系	· Environmental management system
◆ 职业健康安全管理体系	· Occupational health and safety management system
◆ 知识产权管理体系	· Intellectual property management system
◆ 两化融合管理体系	· Information and industrialization integration management system
◆ 测量管理体系	· Measurement management system
◆ 研发管理体系	· R & D management system standardized management
◆ 党建标准化管理体系	· System of Party Building