



中国航天

北京航化节能环保技术有限公司

Beijing Aerospace Petrochemical EC And EP Technology Corporation Limited (BAEEC)

华东理工大学工程设计研究院有限公司

East China Chemical Engineering Inc (ECCEI)



中国航天



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公司介绍

Company Profile

北京航化节能环保技术有限公司隶属于中国航天科技集团有限公司，成立于2010年，是由航天推进技术研究院（航天六院）、北京航天动力研究所、北京航天石化技术装备工程有限公司、航天投资控股有限公司、国华军民融合产业发展基金五家单位共同出资打造的节能环保产业化平台，并控股华东理工大学工程设计研究院有限公司（华理院）。其前身为北京航天动力研究所（北京航天十一所）/北京航天石化技术装备工程有限公司的热能工程（节能环保）事业部，是服务于石油、化工、煤化工等行业的专业装备制造和单元工程总承包商，是国内石油化工行业节能环保领域知名的工程公司。公司地处北京亦庄经济技术开发区，注册资金1.78亿元，总资产超过11亿元。现有员工近300人，其中拥有硕士学位以上的工程技术人员达到了70%以上。

公司依托液体火箭发动机高温、高压、高效、高速燃烧、系统集成及控制技术，致力于民用航天技术产业化发展，主要从事废气废液焚烧系统、固废焚烧系统、硫磺回收系统、工业火炬系统、工业炉节能改造、特种锅炉和工业炉、气化炉烧嘴、喷射器等技术装备的研发、设计、生产和销售，可提供技术咨询、工程设计、制造、采购、工程总承包等工程服务，是中石油、中石化、中海油、国家能源集团等诸多企业的优秀供应商。

公司专注于节能环保行业燃烧领域，服务于工业危废治理及资源化利用，致力于打造高标准的节能环保综合性服务平台。公司坚持“专业化、产业化、工程化、国际化”的发展道路，坚持以航天品牌为国家赢得荣光，坚持以航天科技助力国民经济发展。

承载中国梦，铸就航天情，“航化节能环保”将继续与弘扬中国航天60多年自主创新的奋斗精神，续写新的篇章！

Beijing Aerospace Petrochemical Energy Conservation And Environmental Protection Technology Corporation Limited (hereinafter referred to as BAEEC) was founded in 2010, which belongs to China Aerospace Science and Technology Corporation (CASC). The company is an energy conservation and environmental protection industrialization platform jointly invested by Space Propulsion Technology Academy (the 6th Academy of CASC), Beijing Aerospace Propulsion Institute, Beijing Aerospace Petrochemical Technology and Equipment Engineering Co., Ltd (BAPC), Aerospace investment holding co. LTD, Guohua Military And Civilian Integration Industry Development Fund. BAEEC controls East China Chemical Engineering INC. (ECCEI) in 2017. The company was formerly known as the Thermal Engineering (Energy Conservation and Environmental Protection) Department. It is a professional equipment manufacturer and unit engineering general contractor for petroleum, chemical, coal chemical and other industries, which is the domestic The company has been well-known engineering company in the field of energy conservation and environmental protection. BAEEC is located in Beijing Economic and Technological Development Area (BDA), with a registered capital of 178 million Yuan and total assets of more than 1.1 billion Yuan. BAEEC now has nearly 300 employees, among whom more than 70% have a master's degree or above.

BAEEC depends on the advantages in high temperature, high pressure, high-velocity combustion & reliable auto-ignition for liquid-propellant rocket engine committed to the development of civil space technology industrialization mainly engaged in R&D, production and marketing of 8 kinds of products, which are industrial gas and liquid hazardous waste incineration systems, solid hazardous waste incineration systems, sulfur recovery systems, industrial flare systems, industrial furnace energy-saving reform systems, the special boilers and industrial furnaces, gasifier burners, and ejectors. BAEEC also specialize improvising engineering services such as technical consultation, engineering design, manufacturing, purchasing and EPC project contracting. So far, BAEEC has become an excellent supplier to many enterprises such as CNPC, SINOPEC, CNOOC, China Energy Group, and so on.

BAEEC focuses on the energy conservation and environmental protection industry, serves for industrial hazardous waste management and resource utilization, commits to building a high standard comprehensive service platform for energy conservation and environmental protection. BAEEC adheres to the principle of "specialization, industrialization, engineering and internationalization", adheres to the space brand to win glory for the country, and continues to use space science and technology to boost national economic development.

Trying to fulfill the Chinese Dream by contributing to the aerospace industry, BAEEC will inherit and carry forward the aerospace merits of independent innovation and persistent hard working which have a history over 60 years and continue to create new milestones!

发展历程

Development history

2017.9

增资扩股，更名为北京航化节能环保技术有限公司

Beijing Shiyi Hanghua Science and Technology Ltd. was increase in capital and share, and renamed Beijing Aerospace Petrochemical Energy Conservation And Environmental Protection Technology Corporation Limited (BAEEC)

2010.12

成立北京时翼航化科技有限公司

Beijing Shiyi Hanghua Science and Technology Ltd. was established

1958.4

成立北京航天十一所（北京航天动力研究所）

No.11 Institute of CASC (Beijing) [Beijing Aerospace Propulsion Institute] was established



2017.7

控股华东理工大学设计院有限公司

Controlled East China Chemical Engineering INC. (ECCEI)

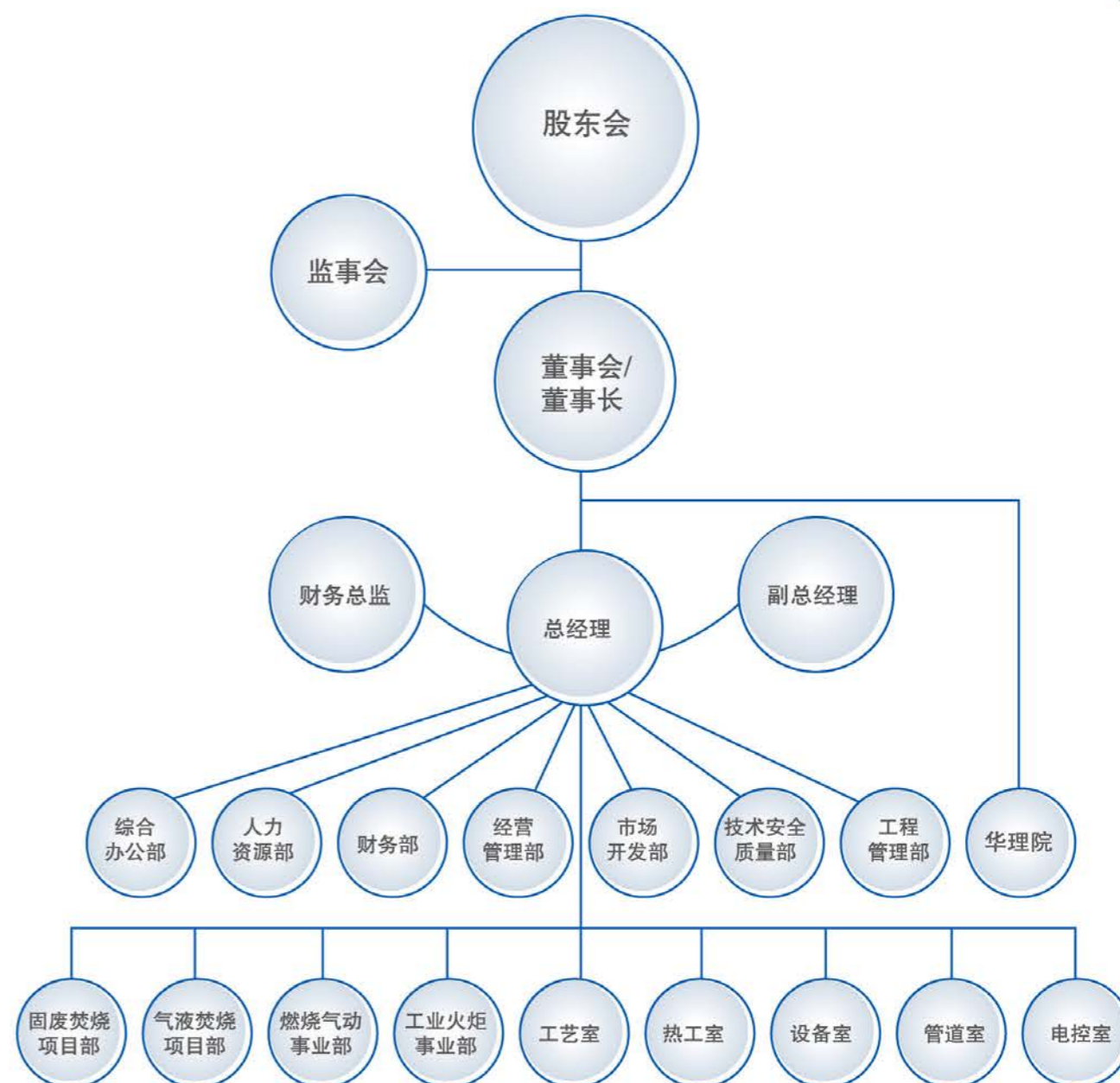
1991.8

成立北京航天石化技术装备工程有限公司 热能工程（节能环保）事业部

Thermal Engineering (Energy Conservation and Environment Protection) Department of BAPC was established

组织机构

organization structure



主营业务

Main Business

废气废液焚烧系统 Waste Gas And Hazardous Liquid Incineration System

热氧化焚烧、蓄热式燃烧、烟气净化
TO, RTO, flue gas cleaning



固废焚烧系统 Solid Hazardous Waste Incineration System

回转窑 / 流化床、复杂物料输送, 烟气净化
Rotary kiln/fluidized bed, complex material transport, flue gas cleaning



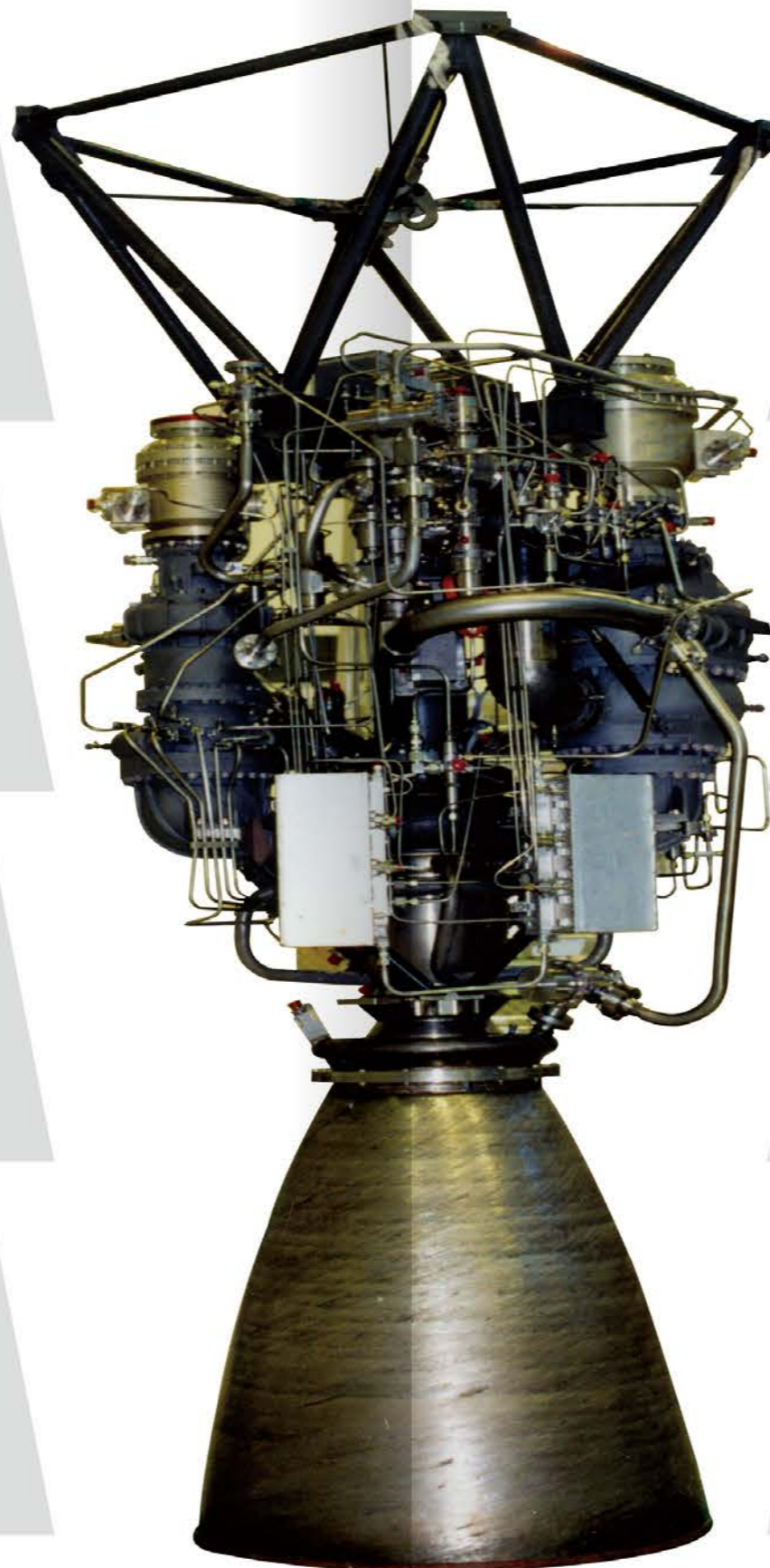
工业火炬系统 Flare System

可拆式高架火炬、捆绑式高架火炬、封闭式地面火炬、开放式地面火炬、火炬气回收系统
Demountable elevated flare, multi-stack elevated flare, enclosed ground flare, multi-burners staged flare



硫回收系统 Sulfur Recovery System

富氧燃烧器、纯氧燃烧器、克劳斯 + 尾气处理工艺
Pure-oxygen burner, rich-oxygen burner, Fluor process



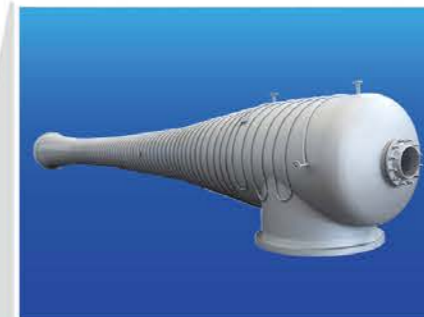
气化炉烧嘴和激冷设备 Gasification Burners And Quench Equipments

燃气烧嘴、渣油烧嘴、粉煤烧嘴、水煤浆烧嘴、激冷环、下降管
Fuel gas burner, residual oil burner, pulverized coal burner, coal water slurry burner, quench ring, downcomer



喷射器 Ejectors

单级喷射器、多级喷射真空系统、文丘里洗涤器
Single-stage ejector, multi-stage jet vacuum system, Venturi scrubber



工业炉节能改造 Energy Saving Renovation Of Industrial Furnaces

低品质热源综合利用、低NOx燃烧器, 大型炉窑温度场控制
Comprehensive utilization of low quality heat source, low NOx burner, temperature field control of large furnace



特种锅炉和工业炉 Special Boilers And Industrial Furnaces

余热锅炉、热风炉、CS₂反应炉
Waste heat recovery boilers, hot-blast heater, CS₂ reaction furnace





工程资质

Engineering Qualification

公司建立了完善的 QSHE 体系，并拥有第一、二类压力容器设计许可证和 GC1(1) (2) (3) 级工业压力管道设计许可证。

2017 年，公司控股华东理工大学设计院有限公司（华理院）。华理院成立于 1988 年，是华东理工大学国家技术转移中心，的工程设计研究部。拥有国家住建部颁发的化工石化医药行业专业甲级、环境工程专项甲级资质及相应建设工程总承包能力，具有工程咨询乙级资信。

华理院是华东理工大学国家技术转移中心。

BAEEC has established a sound QSHE system, also has design licenses for class I and Class II pressure vessels and GC1 (1) (2) (3) pressure piping.

In 2017, BAEEC formally became the controlling shareholder of East China Chemical Engineering Inc. (ECCEI). ECCEI was established in 1988, and it is the National Technology Transfer Center of East China University of Science and Technology. Now ECCEI possesses professional class-A in chemical, petrochemical and pharmaceutical industries (chemical engineering, storage and transportation of petroleum and chemical products, biochemistry, biological medicine, etc.), professional class-A quality in environmental engineering (water pollution control, air pollution control) and capability of corresponding EPC project issued by Ministry of Housing and Urban-Rural. Meanwhile, It also has class-B quality of engineering consulting.

ECCEI is the National Technology Transfer Center of East China University of Science and Technology.





液体火箭发动机技术原理与民用产业实践的长期交融催化，衍生出两大类基础核心技术——燃烧技术、流体与传热技术，以及由两者综合延展而成的具有核心技术的系统工艺技术。

燃烧技术

- 高效洁净焚烧技术
- 纯氧及富氧燃烧技术
- 高可靠点火和无烟燃烧技术
- 安全智能燃烧控制技术
- 转窑及流化床燃烧技术
- 污染物超净排放燃烧技术
- 蓄热式氧化技术（RTO）

流体与传热技术

- 低品位热能回收利用技术
- 含盐物料焚烧锅炉技术
- 固废焚烧处理的供料技术
- 高效换热技术
- 特种余热锅炉技术
- 高温急冷技术
- 真空喷射技术

系统工艺技术

- 含氟氯物料焚烧系统成套技术
- 燃料氮物料多段焚烧系统成套技术
- 硫磺回收成套技术
- 多级真空喷射系统成套技术
- 二硫化碳制备系统工程技术
- 含盐废液焚烧锅炉一体化成套技术
- 固体危险废弃物焚烧系统成套技术
- 工业火炬系统成套技术
- 超临界燃料动态配制成套技术

The long-term development of the combination of technical principle of liquid rocket engine and civil industry practice, two basic core technologies are derived: combustion technology, fluid and heat transfer technology. And combination of these two technologies to form the system process with core technologies.

Combustion technology

- Efficient clean incineration technology
- Rotary kiln and fluidized bed combustion technology
- Pure oxygen and rich-oxygen combustion technology
- Ultra-clean emission combustion technology for pollutants
- Highly reliable ignition and smokeless combustion technology
- Regenerative oxidation technology (RTO)
- Safe intelligent combustion control technology

Fluid and heat transfer technology

- Low-grade heat energy recovery and utilization technology
- Special waste heat boiler technology
- Salt-containing material incineration boiler technology
- High temperature quench technology
- Solid waste incineration treatment of the feed technology
- Vacuum injection technology
- Efficient heat transfer technology

System process technology

- Packaged technology for the incineration system of chlorofluorocarbons
- Packaged integrated technology for salt-containing waste liquid incineration boiler
- Packaged technology of fuel nitrogen multi-stage incineration system
- Packaged technology of solid hazardous waste incineration system
- Packaged set of sulfur recovery technologies
- Packaged technology of industrial torch system
- Packaged technology of multistage vacuum injection system
- Packaged technology for dynamic preparation of supercritical fuel
- Engineering technology of carbon disulfide preparation System

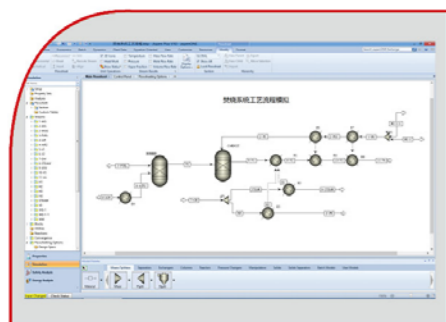
设计能力

Design Capability

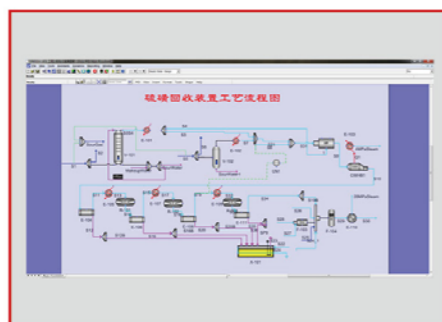
公司采用多种目前国际流行的通用软件和自主开发或二次开发的专业软件在各产品设计过程中进行模拟和优化，做到数值仿真与试验验证的相辅相成。

BAEEC adopts a variety of internationally popular software and independently developed or secondary developed professional software to simulate and optimize each product design process, which is the combination of numerical simulation and experiment.

- Aspen Plus
- Fluent
- PDMS
- Flaresim
- VMGSim
- ANSYS
- CADWORX
- CAESAR II
- BESS
- SolidWorks
- 自主开发的专用软件



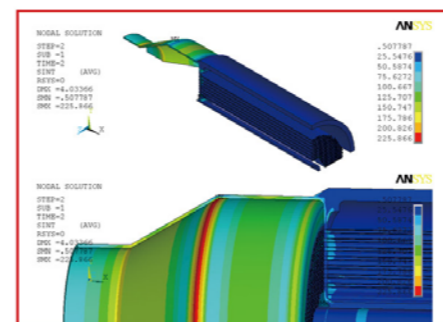
焚烧系统工艺流程模拟
Process simulation of incinerator system



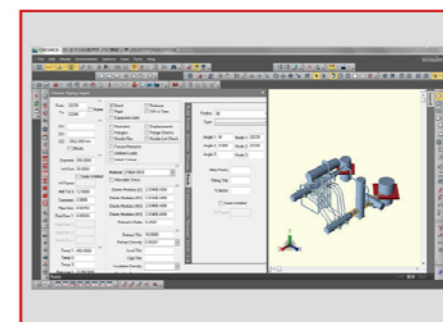
硫磺回收系统工艺流程模拟
Process simulation of sulfur recovery system



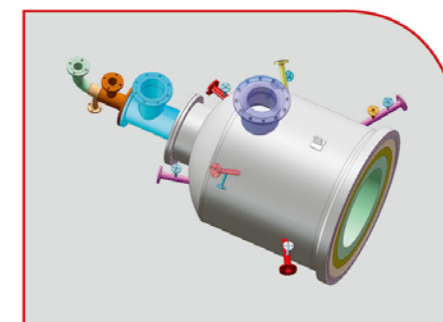
锅炉设计计算
Design and calculation of boiler



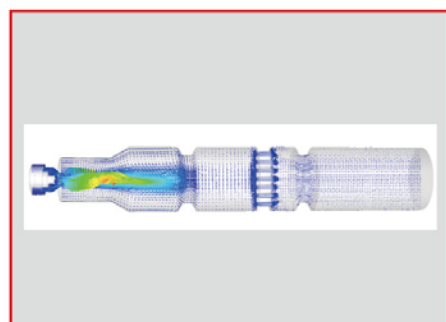
设备应力分析设计
Equipment stress analysis design



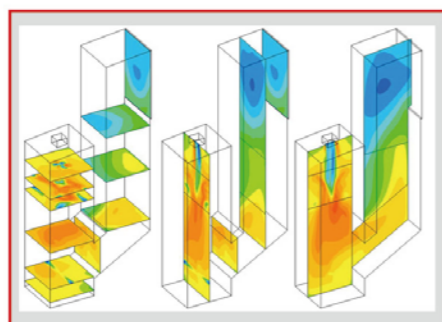
管道应力计算
Pipeline stress calculation



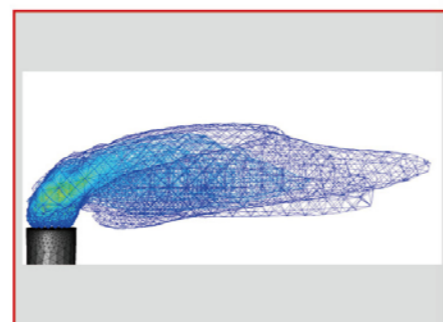
纯氧燃烧器 3D 模型
3D model of pure-oxygen burner



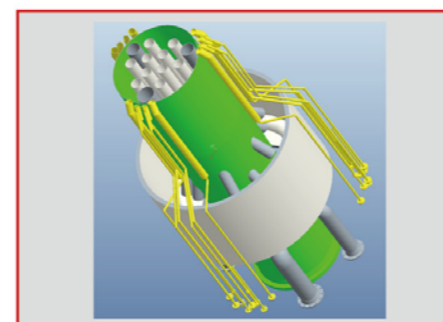
焚烧炉燃烧数值模拟
Numerical simulation of incinerator combustion



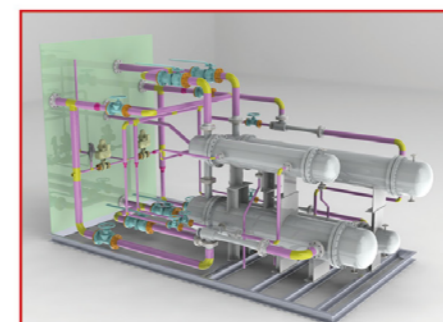
锅炉燃烧数值模拟
Numerical simulation of boiler combustion



火炬燃烧数值模拟
Numerical Simulation of Flare Combustion



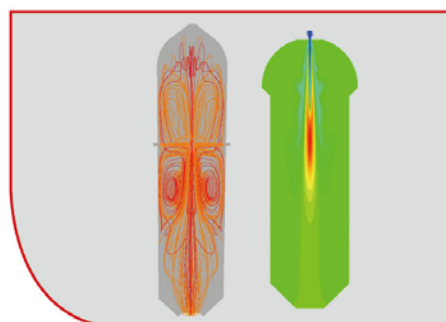
火炬头 3D 模型
3D model of flare head



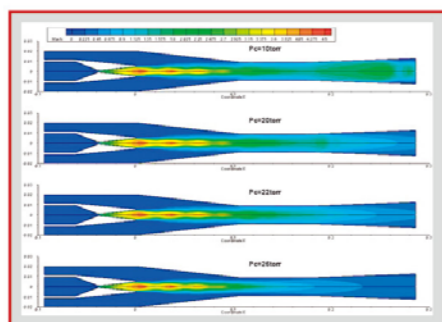
多级真空系统 3D 模型
3D model of multi-stage jet vacuum system



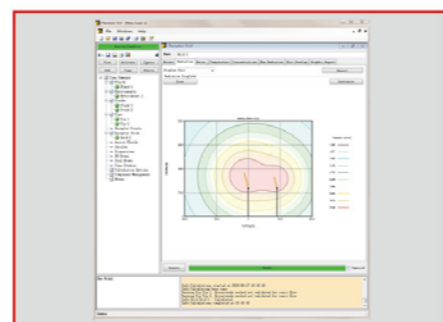
焚烧装置 3D 模型
3D Model of incineration system



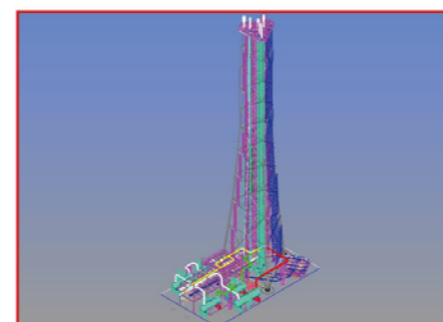
气化炉烧嘴数值模拟
Numerical Simulation of gasifier burner



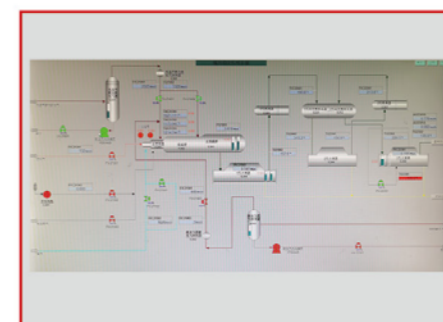
喷射器数值模拟
Numerical Simulation of ejector



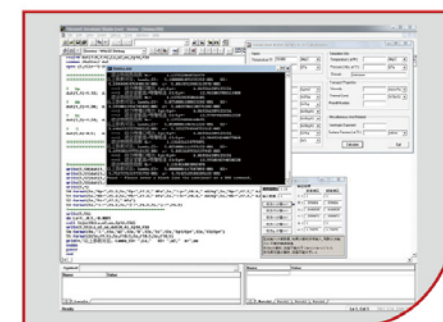
火炬模拟分析
Simulation analysis of flare



高架火炬 3D 模型
3D Model of flare system



安全、稳定、智能的控制系统
Safe, stable and intelligent control system



自主开发的专用软件
Self-developed special software

试验 生产能力

Test and Manufacturing Capability

试验能力

Test capability

公司具有完善的高低压液气流试验和高低温介质研究试验能力，建有亚洲一流的冷、热试验台，为航天民用产品研发提供强有力的科学试验验证。

BAEEC has a complete capability for high and low pressure liquid flow test, high and low temperature medium test. We have the first-class cold and hot test benches in Asia, providing strong experimental evidence for research and development of civil and military aerospace products.

北京航化节能环保技术有限公司

Beijing Aerospace Petrochemical EO & EP Technology Corporation Limited (BAEEC)

华东理工大学工程设计研究院有限公司

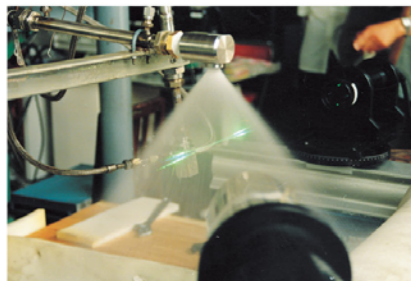
East China Chemical Engineering Inc.



中国航天



烧嘴冷态试验
Cold test of burner



多普勒测试仪
Doppler tester



水力性能试验台
Hydraulic Test bench



真空喷射系统试验台
Jet vacuum system test bench

制造能力

Manufacturing Capability

公司拥有重型装配厂房及精密机械加工中心，拥有航天大型的冲压成型设备、特种焊接设备和高精度的机械加工设备，为完成各种高难度机械加工、特种材料加工和大型非标设备制造提供了有力的保障。

BAEEC has established heavy-duty equipment assembly plants and precision machining centers, and possesses large-scale impact forming equipment, special welding equipment, and high-precision machining equipment for aerospace applications, thus providing a strong guarantee for various tasks with high degree of difficulty such as machining, special material processing, and large-scale non-standard equipment manufacturing.



制造车间
Manufacture workshop



机加工车间
Machining workshop



总装车间
Assembly workshop



热试台
Thermal test bench



成品库车间
Finished products workshop

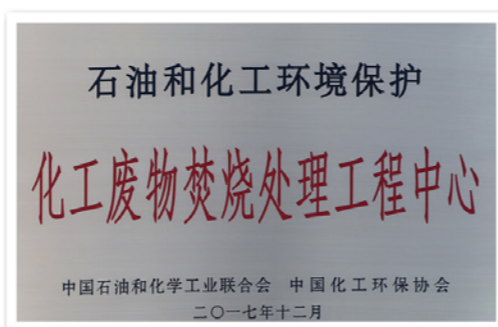
废气废液焚烧系统

Waste Gas and Liquid Incineration System

可为氯碱、氟化工、煤化工、炼油、农药、医药、聚酯、化纤、有机硅、多晶硅、己二酸、丙烯酸、丙烯腈、己内酰胺、BDO (1,4-丁二醇)、MTO (甲醇制烯烃) 等行业量身定制含盐、氯、氟、硅、氮、硫等组分的废气废液焚烧系统。

技术实力:

- 采用低 Nox 燃烧技术, 优选配风方式, 精心组织燃烧;
- 余热锅炉采用独特热防护结构和模块化、水热媒技术;
- 完善的 BMS 燃烧控制系统、PLC/DCS 控制系统和 SIS 安全系统;
- 中国石油和化学工业联合会、中国化工环保协会认定为“化工废物焚烧处理工程中心”;
- 首批入选《石油和化工行业环境保护重点支撑技术目录》的废液、废气热力焚烧环保技术;
- 拥有超过 40 项的焚烧专利技术;
- 超过 200 套焚烧系统在众多重点项目中稳定运行;
- 中国工业危险废物焚烧环保领域的领航者。



Incineration system can be customized safe and reliable incineration environmental protection solutions for the chlor-alkali industry, fluorochemical industry, coal chemical industry, oil refining, pesticide, medicine, polyester, chemical fiber, silicone, polysilicon, hexanedioic acid, acrylic acid, acrylonitrile, caprolactam, BDO (1, 4-butanediol), MTO (methanol to olefin), and so on.

Technical Capacities:

- BAEEC adopt low NOx combustion technology and select the optimal air flow distribution mode to deliver great combustion performance;
- The waste heat boiler adopts unique thermal protection structure and modular, hydrothermal media technology;
- Complete BMS combustion control system, PLC/DCS control system and SIS safety system;
- It is recognized as "chemical waste incineration engineering center" by China petroleum and chemical industry federation and China environmental protection association of chemical industry.
- The waste liquid and gas incineration environmental protection technology becomes one of the first system in The Catalogue of Key Technologies for Environmental Protection in Petroleum and Chemical Industry;
- BAEEC have more than 60 patented incineration technologies;
- More than 200 sets of incineration systems experience stable operation in a number of key projects;
- BAEEC have been the leader in hazardous wastes incineration and environmental protection fields in China.

含氟、氯有机废气废液焚烧系统

Fluorine and Chlorine Containing Waste Gas and Liquid Incineration System

- 1995 年, 为天津大沽化工厂 8 万吨 / 年氯乙烯单体 VCM 工程项目成功研制了废气、废液焚烧单元, 填补了氯碱行业焚烧环保装置的国产化空白;
- 为齐鲁石化氯碱厂研发的“化工含氯废液废气无公害焚烧技术”通过了中石化重大国产化装备科学技术成果鉴定;
- 采用负压急冷工艺, 彻底解决二噁英再生成问题;
- 拥有国内超过 70% 的市场份额, 主要用户包括齐鲁石化、上海氯碱、江西星火、山东东岳、湖北兴发、青岛海晶、青海盐湖、常熟三爱富、阿科玛 (法国)、江苏新浦 (新加坡)、中化太仓等企业。
- In 1995, successfully developed waste gas and liquid waste incineration units for the 80,000-ton/year VCM project of Tianjin Dagu Chemical Plant, which filled the gap in the localization of environmental incineration devices in the chlor-alkali industry;
- The "Pollution-free incineration Technology of chemical Chlorine waste Liquid Waste Gas" developed for Qilu Petrochemical Chlorine-alkali Plant passed the identification of scientific and technological achievements of Sinopec's major domestic equipment;
- Use negative pressure quench process to completely solve the problem of dioxin regeneration;
- With more than 70% of the domestic market share, the main users include Qilu Petrochemical, Shanghai Chloro-alkali, Jiangxi Xinghuo, Shandong Dongyue, Hubei Xingfa, Qingdao Haijing, Qinghai Salt Lake, Changshu 3F, ARKEMA (France), Jiangsu Xinpu (Singapore), Sinochem Taicang and other enterprises.



氯碱废气废液焚烧单元 (齐鲁石化氯碱厂二期)
Incineration unit of waste gas and liquid containing chlorofluorocarbon (phase II of Qilu Petrochemical Chlorine-alkali Plant)



氯碱装置焚烧单元 (上海氯碱三期)
Incineration unit of waste gas and liquid containing chlorofluorocarbon (phase III of Shanghai Chloro-alkali Plant)



有机硅废气废液焚烧单元 (山东东岳二期)
Incineration unit of waste gas and liquid containing chlorosilane (Phase II of Shandong Dongyue)



氟化工废气废液焚烧单元 (中化太仓)
Incineration unit of waste gas and liquid containing fluorine (SINOCHM Taicang)



氟化工废气废液焚烧单元 (阿科玛)
Incineration unit of waste gas and liquid containing fluorine (ARKEMA)



氟化工废气废液焚烧单元 (江苏三爱富)
Incineration unit of waste gas and liquid containing fluorine (Changshu 3F)

含盐有机废液焚烧系统

● Salt-Containing Organic Waste Liquid Incineration System

- 根据有机废液含盐种类和浓度的不同研发了焚烧锅炉一体化工艺方案和负压急冷工艺，有效解决熔盐腐蚀和盐灰堵塞难题；
- 焚烧锅炉一体化工艺方案将高温焚烧、余热利用和无机盐回收有机结合；负压急冷工艺，彻底解决二噁英再生成问题；
- 为神华包头煤化工分公司研发了国内第一套 MTO 装置废碱液焚烧单元；
- “HT 农药废渣废水焚烧处理成套技术与设备”通过了中国石油和化学工业协会科学技术成果鉴定，并被中国农药工业协会大力推荐在全国农药行业中推广使用；
- 可广泛用于医药、农药、BDO、MTO、己内酰胺、丙烯酸、丙烯腈等行业，主要用户包括神华煤制油、中国成达、上海华谊、石家庄炼化、联化科技、雅本化学、沧州旭阳、潍坊新绿、中天合创、万州石化（台湾）、台湾长连等企业。
- According to the different types and concentrations of salt in organic waste liquid, Integrated incineration boiler process and Negative pressure quench process have been developed. Advanced combustion technology and combined dust removal technology have been adopted to effectively solve the problems of melting salt corrosion and ash blockage.
- Integrated incineration boiler process combines high temperature incineration, waste heat utilization and inorganic salt recovery;
- Negative pressure quench process to completely solve the problem of dioxin regeneration;
- Developed the domestic first set of waste lye incineration unit for The MTO plant for Shenhua Baotou Coal chemical Industry;
- "HT pesticide waste residue wastewater incineration Treatment complete set technology and equipment" has passed the scientific and technological achievement appraisal of China Petroleum and Chemical Industry Association, and has been strongly recommended by China Pesticide Industry Association to be promoted and used in the national pesticide industry;
- It can be widely used in medicine, pesticide, BDO, MTO, caprolactam, acrylic acid, acrylonitrile etc. The main customers include Shenhua Coal-to-oil, China Chengda, Shanghai Huayi, Shijiazhuang Refining, Lianhua Technology, Yaben Chemical, Cangzhou Xuyang, Weifang Xinlu, Zhongtian Hechuang, Wanzhou Petrochemical (Taiwan), Taiwan Changlian and other enterprises.



BDO 含盐废液焚烧单元
(新疆蓝山屯河一期、二期)
Incineration unit of waste liquid containing sodium salt(2 sets in Xinjiang Lanshan Tunhe)



丙烯腈废气废液焚烧单元 (山东博汇)
Incineration unit of acrylonitrile waste gas and liquid(Shandong Bohui)



MTO 废碱液焚烧单元 (神华榆林)
Quench incineration unit of MTO waste alkali liquor (Shenhua Yulin)



农药废气废液焚烧单元 (南通雅本)
Incineration unit of waste gas and liquid in pesticide industry (Nantong Yaben)



医药废气废液焚烧单元 (台州联化科技)
Incineration unit of waste gas and liquid in pharmaceuticals industry (Taizhou Lianhua Technology)



氨基酸钾盐废液焚烧装置 (山东新和成)
Incineration unit of Potassium amino acid salt waste liquid (Shandong Xinhecheng)

含硫、氮等废弃物焚烧系统

● S and/or N-Containing Organic Waste Liquid Incineration System

- 为重庆紫光天化蛋氨酸有限责任公司研发了国内第一套蛋氨酸废液、废气焚烧系统；
- 为新疆天利高新技术有限公司研发了国内第一套含笑气的废液、废气焚烧系统；
- 高 H₂S 天然气焚烧炉荣获国家科学技术进步特等奖。
- 主要用户包括燕山石化、上海石化、宁波万华、唐山旭阳、神华准能、中原油田、江苏斯尔邦、金陵帝斯曼（荷兰）、东方帝斯曼（荷兰）等企业。
- Developed the domestic first set of methionine waste liquid and waste gas incineration system for Chongqing Ziguang Tianhua Methionine Co., LTD.;
- Developed the domestic first set of waste liquid and waste gas incineration system with laughing gas for Xinjiang Tianli High-tech Co., LTD.;
- High H₂S natural gas incinerator won the National Science and Technology Progress Award;
- Main customers include Yanshan Petrochemical, Shanghai Petrochemical, Ningbo Wanhua, Tangshan Xuyang, Shenhua Zuneng, Zhongyuan Oilfield, Jiangsuer Bang, DSM (Netherlands), DSM Oriental (Netherlands) etc.



蛋氨酸废气废液焚烧单元
(重庆紫光)
Incineration unit of methionine waste liquid and waste gas (Chongqing Ziguang)



WSA 酸性气焚烧单元
(宝钢)
WSA unit of H₂S gas (Baosteel)



己二酸废气废液焚烧单元
(新疆天利)
Incineration unit of adipic acid waste gas (Xinjiang Tianli)



聚碳废气废液焚烧单元
(山东利华益)
Incineration unit of PC waste gas (Shandong Lihuayli)



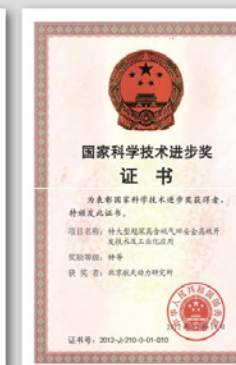
RTO 系统 (上海石化)
VOC RTO System (Sinopec Shanghai Petrochemical)



树脂废气废液焚烧单元
(金陵帝斯曼)
Incineration unit of resin waste gas and liquid (Jinlin DSM)



移动式探井焚烧炉 (中原油田) 获国家科学技术进步特等奖
Mobile exploration well incinerator (Zhongyuan Oilfield), which won the National Science and Technology Progress Award



固废焚烧系统

Solid Hazardous Waste Incineration System

针对性非标设计具有自主知识产权的低氮型燃烧器，耦合高效精准的变工况燃烧控制及供风调节，解决了危险废弃物种类复杂、相态多变、组分波动大的技术难题。拥有 10 多项工业固废焚烧专利技术，形成了独具特色的、先进的工业固废焚烧系统，实现烟气污染物的排放优于 GB18484《危险废弃物焚烧污染控制标准》、欧盟 DIRECTIVE_2010 的超净排放指标。

技术实力：

- 针对复杂物料设计的综合预处理及进料系统，对于待处理物料的适应性更广；
- 具有航天燃烧技术特色的高效焚烧及余热回收系统，具有更高的燃烧焚毁效率和热能回收效率；
- 具有航天雾化技术特色的脱酸、脱硝、除尘等超低排放技术，具有高效、稳定、先进的特点；
- 主要用户包括国家能源集团、内蒙伊泰、江苏辉丰、中国兵器集团、中化集团等企业。

Low NOx burners design the non-standard with proprietary intellectual property rights, also coupled efficient and accurate off-duty combustion control and combustion air adjusting. The technical problems such as the complex type of hazardous waste, the changeability of phase and the fluctuation of components are solved. Nowadays, BAEEC has got more than 10 patents about industrial solid hazardous waste incineration, which made the incineration systems are unique and advanced. It realizes the emission limit values of flue gas pollutants better than GB18484 "Hazardous Waste Incineration Pollution Control Standard" and ultra-net emission targets shown in EU DIRECTIVE_2010.

Technical Capacities:

- Integrated pretreatment and feeding systems designed for complex materials, which has a wider range of adaptability;
- Highly efficient incineration and waste heat recovery system with aerospace combustion technology features have higher combustion efficiency and heat recovery efficiency;
- Ultra-low emission technologies such as deacidification, denitration and dust removal with aerospace atomization technology has the characteristics of high efficiency, stability and advanced.
- Major users include National Energy Group, China North Industries Group, Sinochem Group Inner Mongolia Yitai, etc.



高温回转窑焙烧系统 (神华准能)
High temperature rotary kiln roasting system (Shenhua energy)



煤化工危险废物焚烧系统 (神华宁煤)
Coal chemical hazardous waste incineration system (Shenhua Ningxia Coal)



差温式流态化焙烧系统 (泰安联合)
Differential temperature fluidized roasting system (Taian Lianhe)



医药危险废物焚烧系统 (华中制药)
Hazardous waste incineration system for pharmaceutical industry (Huazhong Pharmacy)



农药危险废物焚烧系统 (江苏辉丰)
Hazardous waste incineration system for pesticide industry (Jiangsu Huifeng)



化工园区危废处置中心 (内蒙独贵塔拉化工园区)
Hazardous Waste Incineration/Solidification/Landfill Disposal Center (Inner Mongolia exclusive tara chemical industrial park)

工业火炬

Flare System

从事各类高架火炬（捆绑式、可拆卸式）、地面火炬（封闭式、开放式）和火炬气回收系统的 EPC 工程总承包服务，同时提供火炬工程咨询、技术改造等服务，业务范围涵盖石油化工、煤化工、炼化、焦化、精细化工及 LNG 等行业，承建国内火炬装置 160 余套、出口 10 余套，一次投运成功率 100%，安全运行零事故。

技术实力：

- 可处理氢气、烷烃、烯烃、炔烃、苯、乙苯、 H_2S 、氨、HCN 等单一或混合组分的火炬气，燃烧效率 $\geq 98\%$ ；
- 拥有健全试验平台，可进行点火系统和火炬燃烧器试验；
- 高架火炬：最大处理能力为 2000 t/h，最大排放规格 DN2200，高度 160 m；
- 封闭式地面火炬最大处理能力 524t/h，最大排放规格 DN1200，四筒体并联；
- 开放式地面火炬最大处理能力为 2200 t/h，分级能力 23 级，最大排放规格 DN2100；
- 点火方式先进可靠，点火成功率 100%；
- 长明灯采用航天专有节能燃烧技术，燃料气耗量低 ($\leq 2Nm^3/h$)、火焰刚劲，抗风能力不小于 160km/h，抗雨能力不小于 50mm/h；
- 消烟技术采用航天专有流体引射技术，消烟效果可小于林格曼黑度 I 级。



乙烯火炬头
Ethylene flare tip



三路消烟高热值火炬头
HHV flare tip with triple steam-assisted nozzles



低热值火炬头
LHV flare tip



伴烧内燃蓄热火炬头
Flare tip with internal combustion heat storage



BAEEC specializes in EPC project services, flare engineering consulting and technological retrofit etc. of all kinds of multi-stack elevated flare, demountable elevated flare, enclosed ground flare, multi-burner staged flare and flare gas recovery system etc. in petrochemical, coal chemical, refinery, coking and fine chemical engineering industries etc. Our company has provided more than 160 sets of flare systems with 100% success rate of first time operation and no safety accidents.

Technical capacities:

- Elevated flare: Maximum processing capacity: 2000t/h; Maximum discharge size: DN2200; Maximum height: 120m.
- Enclosed ground flare: Maximum processing capacity: 524t/h; Maximum discharge size: DN1200; Three stacks multiple.
- Multi-point ground flare: Maximum processing capacity of single set: 2200t/h; Maximum discharge size: DN2100.
- Based on combustion core technology, comprehensive experiment platform is constructed and ignition system experiments and flare burner experiments are able to be conducted.
- Ignition method is advanced and reliable. Success rate of ignition reaches 100%.
- Aerospace-proprietary combustion technology is applied to pilot burner with fuel gas consumption not higher than $2Nm^3/h$, strong flame, wind resistance not less than 160km/h and rain resistance not less than 50mm/h.
- Flame stabilizer ring and dynamic sealer with proprietary technology is applied to elevated flare tip to prevent from backfire and blow-off.
- Ground flare burner could treat flare gas with high or low heat value, and it has big turndown ratio and high stability.
- Aerospace-proprietary fluid injection technology is applied to smoke suppression technology and smoke suppression is less than Ringlemanemittance I.



空气助燃燃烧器
Air-assisted burner



蒸汽助燃燃烧器
Steam-assisted burner



封闭式地面火炬燃烧运行
Enclosed ground flare combustion operation



开放式地面火炬燃烧运行
Multi-burner staged flare combustion operation

高架火炬 Elevated Flare

具有捆绑式、可拆卸式、拉绳式和自支撑式等多种形式，拥有蒸汽消烟火炬、空气消烟火炬、低热值火炬、酸性气火炬、氨火炬、低温火炬等典型产品。

We provide flares with multiple supporting type including derrick-supported multi-stack type, demountable type, guy wire type and self-supported type etc. We provide products including steam smokeless flare, air smokeless flare, low heating value flare, acid gas flare, ammonia flare, low temperature flare etc.



可拆卸式高架火炬
(高度 100m, 浙石化)
Demountable elevated flare
(H=100m, Zhejiang Petrochemical)



捆绑式高架火炬
(高度 100m, 江苏尔邦)
Multi-stack elevated flare
(H=100m, Jiangsu Sierbang)



捆绑式高架火炬
(高度 150m, 河北海伟)
Multi-stack elevated flare
(H=150m, Hebei Haiwei)



捆绑式高架火炬
(高度 160m, 黑龙江龙油)
Multi-stack elevated flare
(H=160m, Heilongjiang Longyou)



拉绳火炬
(出口土库曼斯坦)
Guy wire flare
(Export to Turkmenistan)

地面火炬 Ground Flare

具有低压、高压、高氢、高烃等多种燃烧器结构形式，拥有蒸汽助燃、空气助燃、压力助燃等全套消烟处理方案。

Our burner has multiple structures including low-pressure type, high-pressure type, high-hydrogen type, high-hydrocarbon type etc. We have different full set smoke suppression scheme including steam combustion-supporting scheme, air combustion-supporting scheme and pressure combustion-supporting scheme etc.



三筒体并联封闭式地面火炬 (吉林康奈尔)
Three cylinder parallel enclosed ground flare
(Jilin Connell)



开放式地面火炬 (盘锦宝来)
Multi-burner staged flare
(Panjin Baolai)

火炬气回收系统

The flare gas recover system

用于平衡全厂可燃性气体排放量的无规则波动，实现在正常工况下回收火炬排放气，熄灭火炬。

The flare gas recover system is used to balance the random fluctuation of the amount of the combustible gas discharged in the whole plant, which achieves the recovering off flare gas and put out the flame in normal working conditions.



火炬气回收系统 (东莞巨正源)
Flare gas recovery system
(Dongguan Grand Resource)



火炬气回收与排放地面火炬一体化装置 (大连恒力)
Integrated ground flare unit for recovery and discharge of flare gas (Dalian Hengli)

硫回收系统

Sulfur Recovery System

为硫回收装置研发了酸性气燃烧器、燃烧炉、焚烧炉、废热锅炉等关键设备，可广泛应用于 CLAU S、WSA、LOCAT 等硫回收工艺及尾气处理系统，并为 50 多个客户提供了超过 60 套相关设备和服务。将航天燃烧技术与先进的硫回收尾气脱硫超净排放技术结合，为客户制定最佳的解决方案，满足日益严苛的环保要求。

技术实力:

- 采用纯氧 / 富氧燃烧技术，实现装置设备小型化，降低项目投资和运行费用；
- 采用酸性气中氨完全分解技术，有效防止克劳斯反应工段催化剂的堵塞、腐蚀；
- 采用酸性气中苯、甲苯和二甲苯完全分解技术，确保硫磺纯度达到国标一等品标准；
- 硫磺回收率最高可达 99.9 + %；
- 排放尾气中 H₂S 排放浓度低于 10ppm，SO₂ 排放浓度最低可达到 50 mg。

BAEEC developed acid gas burners, combustion furnaces, incinerators, waste heat boilers and other critical equipment for the sulfur recovery units. The equipment can be widely used in CLAU S, WSA, LOCAT and other sulfur recovery processes and tail gas treatments. We provided over 50 sets of related equipment and services to more than 60 customers. The space combustion technology is combined with advanced sulfur recovery tail gas desulfurization and ultra-net emission technology to Develop the best solution for customers, which can Meet the increasingly stringent environmental requirements.

Technical Capacities:

- Use pure oxygen and rich-oxygen combustion technology to realize miniaturization of equipment and reduce project investment and operating costs;
- Complete decomposition technology of acid gases containing ammonia is applied to effectively prevent clogging and corrosion of catalyst in Claus reaction section;
- Complete decomposition of acid gases containing benzene, methylbenzene and dimethyl benzene is applied to ensure the purity of recovered sulfur meet international first-class standards;
- The highest sulfur recovery rate could be 99.9+ %;
- In flue gas, the concentration of H₂S is below 10ppm, and the concentration of SO₂ can be as low as 50 mg/m³.



纯氧燃烧器
Pure-oxygen burner



富氧燃烧器
Rich-oxygen burner



炼化硫回收装置 (辽宁华锦)
Sulfur recovery unit for refining and chemical (LiaoningHuajin)



煤化工硫回收装置 (内蒙伊泰)
Sulfur recovery unit for coal chemical industry (Yitai Inner Mongolia)



焦化硫回收装置 (日照钢铁)
Sulfur recovery unit for Coking (Rizhao Steel)



硫磺产品
The sulfur product

气化炉烧嘴和激冷设备

Gasification Burners and Quench Equipment

从事多种气化炉工艺烧嘴、激冷设备的设计、制造、维修服务，相关技术和设备广泛应用于国内外近百家企业，业务范围含盖煤化工、石油石化等行业。产品包含气化装置的预热烧嘴、水煤浆烧嘴、渣油烧嘴、粉煤烧嘴、激冷设备等，其中水煤浆烧嘴市场占有率超过 80%，得到国内外客户广泛认可。

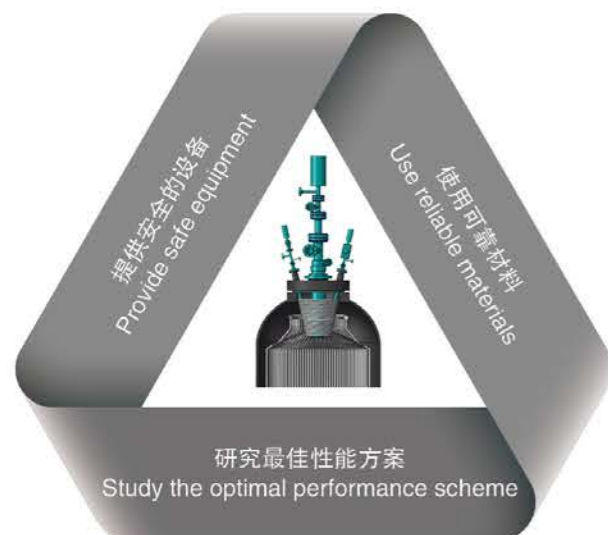
技术实力:

- 配套德士古 (AP)、华理多喷嘴、晋华炉、清华炉、西北院、晋巨炉、航天炉、壳牌、E-GAS 等主流煤气化工艺;
- 适用于 2.0MPa、4.5MPa、6.5MPa、8.7MPa 等各种气化压力等级;
- 适用于 2.8m、3.2m、3.6m、3.88m、4.2m 等各种规格气化炉;
- 烧嘴主要规格有 5"、6"、8"、10"、12"、14" 等;
- 有效气比例超过 80%，碳转化率可达 99%;
- 烧嘴主材为进口镍基管材，喷头采用航天耐磨和热障材料及技术，大幅提高了设备的耐高温和耐冲刷性能;
- 长周期烧嘴连续运行达到 200 天以上，处于世界领先水平，获得多项技术专利;
- **国内唯一一家在水煤浆气化领域技术最全面、业绩覆盖全部气化工艺的供应商及服务商。**

BAEEC is engaged in the design, manufacture and maintenance of various gasifier process burners and cooling equipment. Related technology and equipment are widely used in nearly 100 enterprises, which business scope covers coal chemical industry, petroleum and petrochemical industry. The products include fuel gas burner of gasification unit, coal water slurry burner, residue burner, coal powder burner, cooling equipment and so on. The market share of coal water slurry burner exceeds 80%, which is widely recognized by domestic and foreign customers.

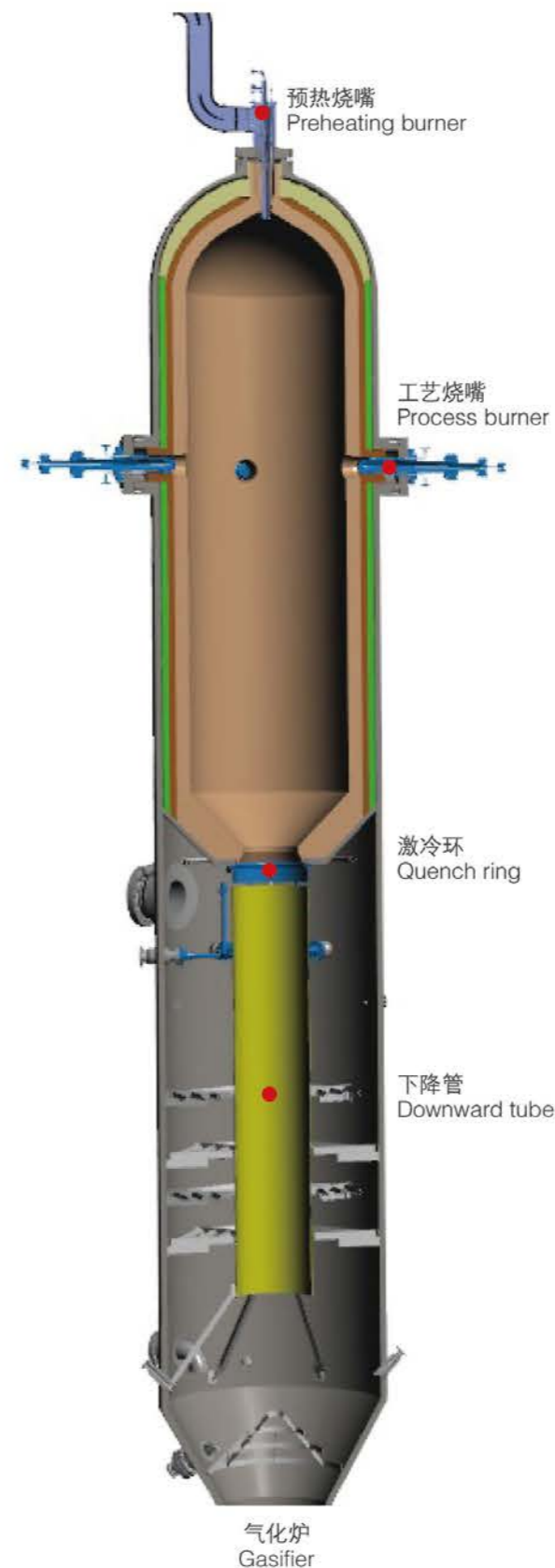
Technical Capacities:

- Supporting mainstream coal gasification processes such as AP, Huali multi-nozzles, Jinhua furnace, Xibei Institute, Jinju furnace, Aerospace furnace, Shell, and E-Gas;
- It is suitable for gasification pressure classes of 2.0MPa, 4.5MPa, 6.5MPa, 8.7MPa, etc.;
- It is suitable for 2.8m, 3.2m, 3.6m, 3.88m, 4.2m and other specifications of gasifiers;
- The main specifications of the burner include 5", 6", 8", 10", 12", 14" and so on;
- The effective gas ratio exceeds 80%, and the carbon conversion rate can reach 99%;
- The burner is made of imported nickel-based pipe, and the nozzle is made of aerospace wear resistant and thermal barrier material and technology, which greatly improves the high temperature resistance and erosion resistance of the equipment;
- The long operation period burner has been running continuously for more than 200 days, which is the world's leading level and has obtained a number of technical patents;
- **The only domestic supplier and service provider with the most comprehensive technology and performance covering all gasification processes in CWS gasification field.**



火箭系统
Rocket system

气化系统
Gasification system



工艺烧嘴
Process burner



燃气烧嘴
Fuel gas burner



激冷环
Quench ring



下降管
Downward tube

气化炉烧嘴

Gasification burner

气化炉烧嘴是水煤浆加压气化工艺的“心脏”，其寿命严重影响气化运行周期及全厂经济效益。

水煤浆烧嘴是工况最为恶劣、技术难度最大的高温、高压、纯氧特种非标燃烧器。

自主研发国内水煤浆水冷壁气化炉配套组合烧嘴，集智能点火、烘炉、投料及远程自动化于一体，是该气化工艺的唯一供应商。

Gasifier burner is the "heart" of coal water slurry pressurized gasification process, which operation period seriously affects the gasification operation cycle and the economic benefit of the whole plant.

Coal water slurry burner is the worst working condition and the most difficult special non-standard burner in high temperature, high pressure and pure oxygen conditions.

Combination burner for domestic coal-water slurry water-wall gasifier is independent research and development by BAEEC, which setting intelligent ignition, oven, feeding and remote automation in one, is the sole supplier of the gasification process.



重油烧嘴
Residual oil burners



粉煤烧嘴
Pulverized coal burner



水煤浆组合烧嘴
Combined burner



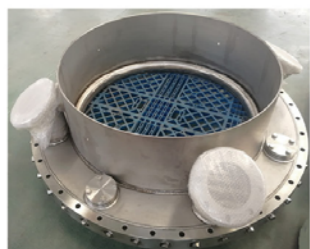
水煤浆工艺烧嘴
Coal water slurry burner

激冷设备

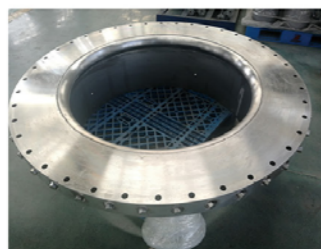
Quench equipments

配套工艺包商研发多种炉型的激冷设备，提供可行性优化设计方案。

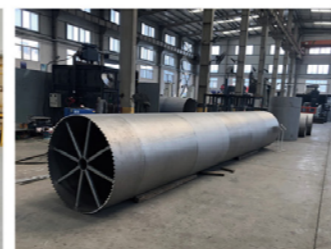
Supporting process contractor research and development of a variety of furnace cooling equipment, provide feasibility optimization design scheme.



激冷环
Quench ring



激冷器下降管
Downward tub



维修 & 改造服务

After sales service

- 优化设计：针对煤种变化、负荷调整，设计维修改造烧嘴；
 - 快速响应：专车运输专人负责，一周内完成维修工作；
 - 年均产能：签订长期售后服务框架，烧嘴维修年均超千台；
 - 创新维修：采用航天专有技术，突破寿命瓶颈。
- Optimization design: Design, repair and transform burner for coal type change and load adjustment;
 - Quick response: special transport person is responsible for the maintenance within a week;
 - Annual capacity: more than 1000 maintenance orders per year, long-term after-sales service framework;
 - Innovative maintenance: Application of aerospace technology to optimize the design, break the life bottleneck, expand the life extension technology.



常规烧嘴维修前后
Conventional burner maintenance before and after



组合烧嘴维修前后
Combined burner maintenance before and after



激冷环维修前后
Quench ring before and after maintenance



烧嘴延寿改造前后
Burner before and after life extension modification

喷射器

Ejectors

面向能源、化工、冶金等工业领域，提供各类喷射器、喷射真空系统、减温器、急冷器、喷嘴、文丘里洗涤器、除尘系统、混合器、分离器、流体输送等流体动力设备和系统。经过 30 多年的发展，积淀了丰富的工程经验，掌握核心技术，形成了完善的设计流程和试验方法，实现了产品类型和应用业绩的全覆盖，可全部替代进口设备，满足用户装置降本增效的发展需求。特别是多级喷射真空系统，用户只需提出公用工程和出入口条件，就可对真空系统进行最优化的匹配设计，使公用工程消耗降到最低，有效降低装置运行成本。

技术实力：

- 拥有自主知识产权的各类设计软件，具有完善的模拟和试验研发设施；
- 多级真空系统抽吸压力最低可达 10PaA；高压喷射器工作压力可达 17.5MPaG；
- 设备类型全面，可处理气体、液体、固体等各种相态介质；
- 设备外形尺寸短至 50mm 以下，长至二十多米；
- 年均 在煤气化、尿素、PTA、聚酯、炼油、海水淡化、热电、炼钢、食品等工业领域提供 600 台（套）以上各种喷射类设备或系统，累积供货了近万台单体设备和数百套系统设备。
- 用于煤气化装置的文丘里洗涤器，对 0.5 ~ 5 μm 的尘粒除尘效率可达 99% 以上。实现了国内主流加压煤气化装置应用业绩的全覆盖，使用性能和操作维护上较传统设计有所突破和提升，累积实现了 150 多台套运行业绩。

BAEEC provides all kinds of ejectors, ejector vacuum system, temperature reducers, quenchers, nozzles, Venturi scrubbers, dust removal system, mixers, separators, fluid transport and other fluid power equipments and systems in energy, chemical, metallurgical and other industrial fields. After 30 years of development, BAEEC accumulated rich engineering experience, mastered the core technologies, formed the perfect design process and test methods. The products achieve full coverage of product types and application performance. They can replace all imported equipment to meet the customer's development demand of cost reduction and efficiency increase. In particular, as long as the customer puts forward the conditions of utility and inlet and outlet, the optimized matching design of multistage injection vacuum system can be carried out to minimize the utility consumption and effectively reduce the operating cost of the device.

Technical Capacities:

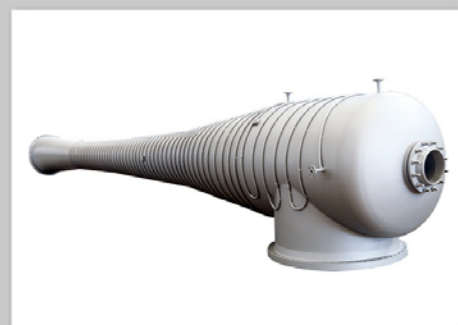
- BAEEC has independent intellectual property rights and perfect all kinds of design software simulation and experimental research and development facilities;
- The lowest pressure of multistage vacuum suction system can reach 10 PaA; the operating pressure of high pressure injector is up to 17.5MPaG;
- BAEEC has comprehensive device type can handle a variety of phase state media such as gas, liquid and solid;
- The device dimension size range from 50 mm, to more than 20 meters;
- Annual provides more than 600 sets of various injection device or system in coal gasification, urea, PTA, polyester, oil refining, seawater desalination, thermoelectricity, steel, food and other industrial fields, accumulative supplied nearly 10,000 sets of equipment and hundreds of system;
- Venturi scrubber for coal gasification device can be reach above 99% of dust removal efficiency on 0.5 ~ 5 μm dusts. The full coverage of application performance is realized in domestic mainstream pressurized coal gasification unit. Compared with the traditional design, the service performance and operation maintenance have breakthrough and improvement. The accumulated operating performance has achieved more than 150 sets.



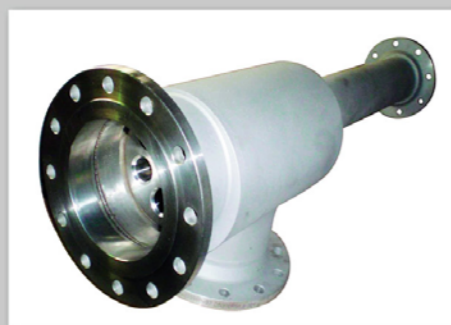
减温器
Desuperheater



尿素高压甲铵喷射器
Urea High Pressure Carbamate Ejector



单体喷射器
Single-Stage Ejector



多喷嘴喷射器
Multi-nozzle Ejector



可调式喷射器
Adjustable Ejector



丁辛醇装置精馏真空系统
Rectification Vacuum System for Oxo
Alcohol Device



多级喷射真空系统
Multi-stage Ejector Vacuum System



文丘里洗涤器
Venturi Scrubber



工业炉节能系统技术

Energy saving system technology for furnaces

利用液体火箭发动机燃烧、传热、控制及动态仿真等核心技术，实现工业装置热能利用效率的最优化，通过回收低品质热源（低压蒸汽、急冷水、中低压凝液、各种排污水等）的余热对乙烯/乙烷裂解炉、苯乙烯裂解炉、芳烃重整炉及其他各类大型加热炉燃烧装置所需的助燃空气进行预热，实现双向节能。

技术实力：

- 无需增加任何额外能耗，可降低燃料消耗 1.5%~5%；
- 国际 / 国内首创，获中石油、中石化各公司的大力支持及推广；
- 2003 年获得国家发明专利证书；
- 2008 年入选国家发改委推荐的“国家重点推广的 50 项节能技术”；
- 2010 年获科技部“国家重点新产品”
- 2017 年入选“北京市节能低碳技术示范推广名录”
- 工程应用超过 300 台套，每年创造效益约 10 亿元。

Based on key combustion, heat transfer, control and dynamic simulation technologies of LPREs, BAEEC can optimize industrial systems thermal efficiency.

The low-quality waste heat sources (such as low-pressure steam, quenched water, middle and low pressure condensate, wastewater, etc.) can be recycled to preheat the combustion air which was fed into ethylene/ethane cracking furnaces, styrene cracking furnaces, aromatic hydrocarbon reforming furnaces and other large scale heating furnaces. It realizes the two-way energy saving.

Technical Capacities:

- There is essentially no additional energy required for the treatment process, reducing the fuel consumption by 1.5-5%;
- It pioneered both at home and abroad, and is strongly supported and promoted by Petro China and Sinopec;
- In 2003, it was awarded the National Invention Patent Certificate;
- In 2008, it was listed as one of "50 key energy conservation technologies promoted in China" by the National Development and Reform Commission;
- In 2010, it was awarded "National Key New Product" by the Ministry of Science and Technology;
- In 2017, it was selected into the "Beijing Low-carbon Technology Demonstration and Promotion Directory";
- More than 300 sets of equipment have been put into service, and the annual benefits about 1 billion.



余热锅炉和工业炉

Waste Heat Boilers and Industrial Furnaces

余热锅炉

Waste heat boilers

利用化工生产过程中的高温物流作为热源来产生蒸汽的换热设备，包括管壳式余热锅炉和水管式余热锅炉。

管壳式余热锅炉

采用自主开发的热力计算软件，并依据丰富的运行经验对锅炉计算结果进行特别修正以保证其良好的工艺性能和经济性。余热锅炉可根据后续流程需要设计内置调节机构，以满足工艺气体出口温度的需要。通过对挠性薄管板结构真实模拟温度场，并与结构耦合模拟锅炉的应力云图，从而对危险部位进行优化，提高设备寿命及可靠性。

水管式余热锅炉

采用模块化结构、水热媒等技术，合理利用尾部烟气热量并防止低温腐蚀，提高锅炉制造安装质量，缩短了锅炉安装周期。针对烟气中含尘、含盐或腐蚀性的特点，采用成熟的针对性结构设计，保证设备长期连续运行。

The heat transfer equipment which uses hot stream from the chemical production process as the heat source for generating steam includes shell and tube waste heat recovery boilers and water tube waste heat recovery boilers.

Shell and tube waste heat boilers

Relying on the independently developed thermal calculation software and rich operating experience, we have modified the calculation results, aiming to guarantee excellent performance and cost-effectiveness of the boilers. A built-in regulating mechanism may be designed according to the process demands, to maintain required process gas outlet temperature. Through the analog simulation of temperature field of the flexible thin-walled tube plate structure and according to the structure coupling stress nephogram, the fragile parts have been optimized to extend the equipment life and reliability.

Water tube waste heat boilers

Water tube waste heat boilers are built in module structure and water heat transfer medium, which extract heat from hot flue gas to prevent low temperature corrosion. It achieved high-quality manufacturing and shorten the installation period. On account of the fact that the flue gas contains dust, salt, and corrosive substance, a mature structural design is adopted to ensure long-term continuous operation of the equipment.



管壳式余热锅炉

Shell and tube waste heat boiler

水管式余热锅炉

Water tube waste heat boiler

热风炉

Hot-blast heater

将燃烧产生的高温热烟气通过强化换热方式把空气加热，以提供符合工艺烘干需要的一定温度和流量的热风，可为复合肥、煤化工及其它干燥行业提供所需的热风源。

技术实力:

- 燃烧器燃料适应性强，可使用柴油，天然气，合成气，低热值气等作为燃料；
- 负荷调节比大，最大可达 1:20；
- 采用多层保温结构，热效率高达 97% 以上；
- 具备自动点火、启停功能，可根据热风出口温度自动调节热负荷；
- 自动调节空燃比，控制烟气含氧量 $\leq 5\%$ ；
- 具备完善的安保连锁及报警功能。

The high-temperature gas generated from combustion is used to heat the air by means of heat transfer enhancement, so as to provide hot air at required temperature and flow rate for drying, and also to provide hot air source to compound fertilizer industry, coal chemical industry, and other industries containing the drying process.

Technical Capacities:

- High fuel flexibility, it can use diesel, natural gas, synthetic gas and low calorific value gas as fuel;
- 1:20 maximum load regulating ratio;
- Multilayer thermal insulation structure issued, with the thermal efficiency over 97%;
- Automatic ignition and start/stop functions are available, and the thermal load can be adjusted automatically according to the hot air outlet temperature;
- The air-fuel ratio can be adjusted automatically, while maintaining the flue gas oxygen level $\leq 5\%$;
- Perfect security interlocking and alarm functions are provided.



热风炉

Hot-blast heater

CS₂ 反应炉

CS₂ Reaction furnace

裂解与转化反应的“心脏”设备，具有高温、反应复杂、温度场分布要求严格、控制系统精度高等特点。目前已形成 CS₂ 反应炉系列产品，并具备成套管式反应炉的设计能力。

技术实力：

- 采用低 NO_x 燃烧器，有效降低氮氧化物生成量；
- 物料转化率高达 96%；
- 燃料燃尽率可达 99%；
- 整体热效率可达 90% 以上。

Reaction furnace is the key equipment of decomposition and reforming reaction, strict temperature field distribution and accurate system control. We have a series CS₂ reaction furnaces and design capacity of complete set of tubular reactor.

Technical Capacities:

- Low NO_x burners are used to effectively reduce the volume of Nitrogen oxides.
- Maximum 96% Material conversion ratio
- Maximum 99% Fuel burning ratio
- 90%+ whole thermal effectiveness of the furnace



CS₂ 反应炉
CS₂ Reaction furnace

工业炉改造

Technical Modification of Industrial Boilers

为电站锅炉、蒸汽加热炉、各种废液废气焚烧炉等进行节能环保改造，以适应锅炉燃料结构的变化、改善锅炉的自动化控制水平、提高锅炉的热效率等。先后为上海石化、扬子石化、燕山石化、吉林石化、茂名石化、兰州石化等国有大型企业提供了从技术方案论证到工程设计、设备仪表供货及现场调试开车的整套工程服务工作。

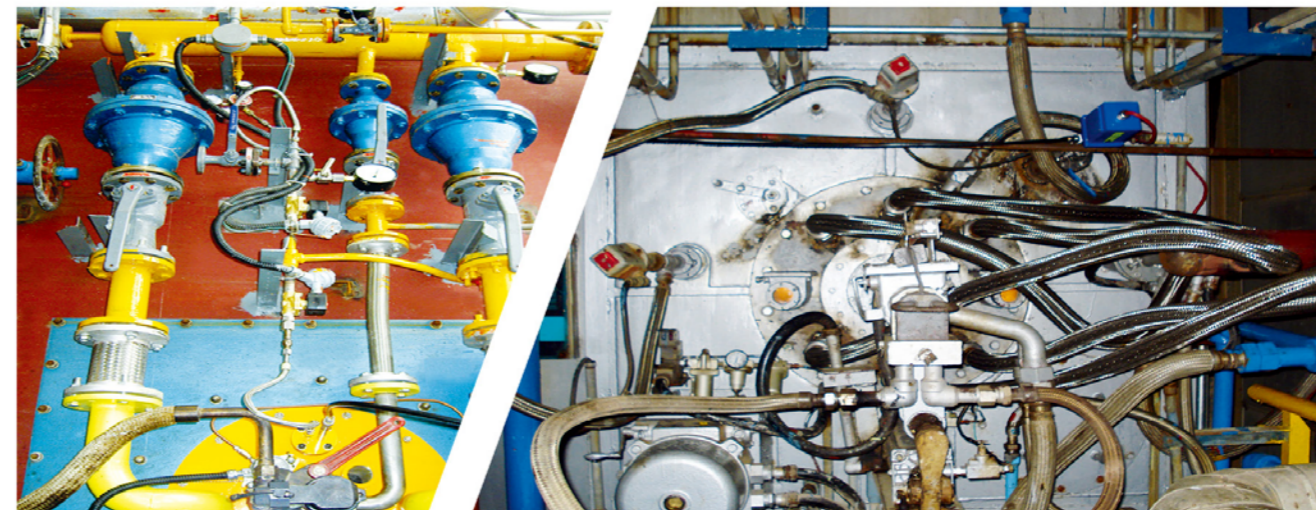
技术实力：

- 燃气可使用液化气、天然气、石油炼厂气、高炉气、转炉气、焦炉气、发生炉气、城市煤气等；
- 燃油可使用轻油、重柴油、重油、焦油、渣油、沥青油等，能实现冷态电子自动点火；
- 可实现氧含量调节和选择性比例调节控制；
- 燃油雾化效果好，燃油雾化颗粒度小，尺寸分布均匀；
- 燃烧效率可达 99.9% 以上；
- 火焰长度、锥角及形状可按用户要求设计；
- 流量调节范围大，调节比可达 1:5；
- 可实现自动化控制及实时监控等。

BAEEC can undertake the energy saving and environmental protection, changes in fuel structure, improve the level of automation, and increase the thermal efficiency, technical modification of boilers in power plants, steam boilers, various waste gas and waste liquid incinerators. We have provided many large-sized state-owned enterprises such as Sinopec Shanghai, Sinopec Yangzi, Sinopec Beijing Yanshan, Sinopec Jilin, Sinopec Maoming, and Sinopec Lanzhou with a complete set of engineering services from technical scheme demonstration to engineering & design, supply of equipment and instruments, and on site commissioning.

Technical Capacities:

- Liquefied gas, natural gas, petroleum refinery gas, blast furnace gas, converter gas, coke-oven gas, generator gas and city gas can be used as fuel gas;
- Light oil, heavy diesel oil, heavy oil, tar, residual oil and asphaltic oil can be used as fuel oil, and cold-state electronic auto-ignition is feasible;
- The oxygen content adjust mentand selective ratio control can be obtained;
- The fuel oil atomization is satisfactory with small and evenly-distributed particle size;
- The combustion efficiency is over 99.9%;
- The length, cone angle and shape off lame can be customized;
- The flow rate can be controlled across a very wide range and the regulating ratio can reach 1:5;
- Automatic control and real-time monitoring can be achieved.



燃烧系统改造
Technical modification of combustion system

工业污水处理

Treatment of Industrial Sewage

通过在废水处理领域的技术研发及工程实践，积累了大量成熟可靠的废水处理组合工艺和解决方案，尤其是高盐、高油、高氨氮、低氨氮废水的治理及回用，广泛应用在石油化工、医药、纺织、印染、农药等行业领域。公司与华东理工大学、北京大学、南京工业大学深度合作，产学研结合，发挥各自优势，致力于为企业量身定做专业的解决方案。

Based on the technology and the experience of the industrial waste water conduction. BAEEC has obtained reliable waste water treatment solutions, especially for the waste with high proportion of salinity, oil and nitrogen. All the technologies we own are applied to the industries such as petrochemical, medical, textile, print and agriculture. BAEEC has cooperated with various famous universities such as Colleges of Environment of East China University of Science and Technology, Peking University and Nanjing Tech University to develop innovative solutions to clients.



张家港东沙化工污水处理工程
Zhangjiagang waste sewage treatment project



秦安县污水处理厂提标改造工程
Qinan County sewage treatment plant upgrading project



山东兖矿鲁南化肥厂污水处理与回用工程
Shandong Yankuang Lunan Chemical Fertilizer Plant sewage treatment and reuse project



年份	项目	工艺方法	进水水质	出水水质
2017	中石化宁波工程有限公司煤化工高含盐水分质结晶项目	化学沉淀+树脂软化+ED+高级氧化脱色+多效催化氧化+蒸发结晶	COD<600mg/L; 总硬度:1700-4636 mg/L; 色度:30-500; 电导:36600-48000us/cm	地表水 III 类标准
2018	桐乡龙欣印染有限公司高盐碱减量废水处理	水解酸化+一级好氧+多效氧化系统+二级好氧	COD ≤ 6000mg/L	COD ≤ 500mg/L
	秦安县污水处理厂提标改造和资源化工程	G-BAF+生化	COD:750 mg/L; 氨氮:150 mg/L;SS:230 mg/L	地表水 IV 类标准
2019	安岳气田高石梯-磨溪区块地面净化厂零排放项目	化学沉淀+树脂软化+UF+RO+浓水RO	COD<100mg/L; 总硬度:800-1200 mg/L; 电导:8000us/cm	工业循环冷却水补充水
	长宁页岩气田宁209井区返排液处理工程	化学沉淀+树脂软化+ED+RO+多效催化氧化+蒸发结晶	COD<1500mg/L; 总硬度:1000-18000 mg/LTDS:4616-36254 mg/L	地表水 III 类标准