



中国航天



## 以航天科技，打造一流的加热炉、导热油炉产品和服务

Devoted to build first-class heater products and services utilizing aerospace science and technology



## 热能工程 (加热炉) 事业部 Thermal Engineering (Heater) department

北京航天动力研究所 (北京航天十一所)

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

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## 目录 Contents

|    |             |                                 |
|----|-------------|---------------------------------|
| 01 | 公司简介        | Introduction                    |
| 03 | 事业部简介       | Introduction of the Division    |
| 04 | 企业资质及荣誉     | Certificate and License         |
| 05 | 生产制造能力      | Manufacturing Capacity          |
| 06 | 研发能力        | Research and Development        |
| 07 | 工程总包及技术服务能力 | Project EPC & Technical Service |
| 09 | 导热油炉系统      | Hot Oil Heater System           |
| 13 | 国际合作项目      | International Project           |
| 17 | 管式加热炉       | Tubular Heater                  |
| 23 | 燃烧器         | Burner                          |
| 24 | 喷射器         | Ejector                         |
| 25 | 工程改造        | Engineering Reconstruction      |
| 27 | 我们的客户       | Clients List                    |

# I 公司简介 Introduction

## 树航天旗帜 铸民族品牌 Creating an Aerospace Milestone Establishing a National Brand



公司总部 Headquarter



生产基地 Fabrication center

**北京航天动力研究所(中国航天科技集团公司六院十一所(京))**创建于1958年,是我国液体火箭动力事业的发源地,有着深厚的科研基础与企业文化积淀,以精湛的技术,强劲的动力,支撑了国防现代化建设和中国航天事业的发展,研制了多种液体火箭发动机,助推了“两弹一星”、“载人航天”、“嫦娥探月”等国家重点任务。

北京航天动力研究所致力于推动液体火箭发动机技术在航天及更广泛领域的应用,形成了宇航推进及航天技术应用产业两大主营业务,把航天高科技带到了国民经济和社会生活的广泛领域,成为航天系统内军民融合的领跑者。

1991年成立的北京航天石化技术装备工程有限公司是北京航天动力研究所的全资子公司。公司以“国家特种泵阀工程技术研究中心”为创新平台,以液体火箭发动机专业技术为依托,着力推动热能工程、特种泵阀的技术创新和产业化发展,形成了热能工程、流体旋转机械、特种阀门三大专业领域,开发了适合高效节能环保要求、具有核心竞争力的先进热能工程解决方案,研制了一大批技术性能先进的装备和产品,造就出一批实力雄厚的国产化示范工程。

“航天石化”服务于能源化工、石油化工、煤化工等国民经济主导行业,是中石化、中石油、中海油、神华集团等重点石化、煤化工企业的优秀供应商,并与众多国际工程公司形成战略合作伙伴关系,“航天石化”已成为航天高科技应用于国民经济重点领域的知名品牌和旗帜。

**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)**是“国家高技术重大专项重大贡献单位”,“国防科技重大突破专项奖单位”,“探月工程突出贡献奖单位”,以航天科技助力国家经济发展,以航天品牌为国家赢得荣光,开创了“专业化、产业化、工程化、国际化”的发展道路,为实现构建军民融合、国际知名的高新技术企业的目标而不断进取。承载中国梦,铸就航天情,“航天石化”将继续与弘扬中国航天50多年来自主创新精神的奋斗精神,续写新的传奇!

Founded in 1958, **Beijing Aerospace Propulsion Institute (also known as Beijing No. 11 Institute of the 6th Academy of China Aerospace Science and Technology Corporation)** is the cradle of China's Liquid Propellant Rocket Engines (LPREs). With sophisticated research and development (R&D) foundation and profound enterprise culture, the Institute has developed various kinds of LPREs with state-of-art technology and strong power to boost major national aerospace projects in China's aerospace history, such as "Atomic and Hydrogen Bombs and Man-made Satellite Project", "Manned Spaceflight Project" and "Lunar Exploration Project". It has supported the modernization of China's national defense and promoted the development of China's aerospace industry.

The Institute is devoted to the application of LPRE technologies in aerospace and other fields and has formed two main businesses, that is, aerospace propulsion industry and aerospace technology application industry. It brings the aerospace high-tech to common industries and daily lives, and has become the pioneer of using military technology to benefit social economy in aerospace arena. Established in 1991, Beijing Aerospace Petrochemical Technology and Equipment Engineering Corporation Limited(BAPC) is the institute's wholly-owned subsidiary. With "National Engineering Research Center for Special Pump and Valve" as its innovation platform, based on aerospace technologies, BAPC has cultivated many proprietary technologies and competitive products in the fields of thermal engineering, fluid rotating machinery, special pumps and valves, boosted the technology innovation and

industrialization of those fields. It has developed cutting-edge products, provided efficient and environment-friendly system solutions and built national demonstration projects. BAPC serves energy, petrochemical, coal chemical and other key industrial areas of national economy. It is a strategic cooperation partner and excellent supplier of many famous domestic and overseas enterprises, such as CNPC, Sinopec, CNOOC and Shenhua Group. "BAPC" is well-known for applying advanced aerospace technology to key industrial areas in the national economy, thus becomes a model in this field.

**Beijing Aerospace Propulsion Institute (Beijing Aerospace Petrochemical Technology and Equipment Engineering Corporation Limited)** boosts the development of national economy by aerospace science and technology and adds national honors with self-developed brands. It has gained many national prizes and awards, such as "Great Contributor to the National Major Special High-Tech Projects", "Science and Technology Prize for a Major Breakthrough in the Special National Defense Field" and "Outstanding Contributor to Lunar Exploration Project".

It has created a development mode of "specialization, engineering, industrialization and internationalization" and keeps on advancing in order to realize the goal of building a civil-military integration and international well-known high-tech enterprise. Trying to fulfill the Chinese Dream by contributing to the aerospace industry, BAPC will inherit and carry forward the aerospace merits of independent innovation and persistent hard working which have a history over 50 years and continue to create new milestones.

# I 事业部简介 Introduction of the Division

热能工程（加热炉）事业部是北京航天石化技术装备工程有限公司主导产品事业部之一，事业部前身从事液体火箭发动机推力室研究设计工作，完成过长征系列火箭发动机推力室设计，在燃烧、传热、气动和真空专业技术方面积累了丰富的经验。

事业部拥有一批具有多年实践经验的技术专家队伍和经营管理队伍，拥有具有自主知识产权的热力计算软件及国外成熟的技术软件，具有成套单元设备工程总包的能力，在加热炉炉型设计、燃烧组织与自动控制三大核心技术的集成方面具有领先的技术优势，主导产品导热油炉在聚酯行业和石油化工行业中已经全面替代了国外的高端同类产品，圆筒炉、箱式炉、梯台炉等大型管式加热炉、真空喷射系统、燃烧设备在全国各大石化企业及国际市场建立了良好的业绩。

近年来，北京航天石化技术装备工程有限公司的市场形象和品牌不断提升，是中石油、中石化、中海油、中化等集团的资源市场成员，并成为仪征化纤、上海石化、齐鲁石化、扬子石化、神华集团、惠生公司等重点石化企业的优秀供应商。

Heater Division is one of the primary departments of BAPC. The division originally designed the propulsion chamber for liquid rocket engines and had accomplished the design of propulsion chamber for CHANGZHENG series rocket engines. The division has rich experience in the fields of combustion, heat transmission, aerodynamics and vacuum technology. It has a staff of experienced professional experts and managers. They developed proprietary thermal calculation software with intellectual property rights, and also use other international common technical software for the design of products. The division is competent for equipment package engineering and expertise in integrating the three major technologies of heaters—heater type design, combustion management and automatic control. Hot oil heaters (heat transfer medium heaters), the division's main products, have been widely used in polyester and petrochemical plants. Cylindrical heater, box type heater, step heater, vacuum injector system, and other fired equipment also have obtained outstanding achievements in various petrochemical enterprises in China and overseas market. In recent years, BAPC continuously improves its market status and brand reputation. It has been qualified sourcing market membership of PetroChina and Sinopec and an excellent supplier of major petrochemical enterprises in China, such as Yizheng Chemical Fiber Corporation, Sinopec Qilu Company Ltd., and Sinopec Yangzi Petrochemical Company Ltd.

# C 企业资质及荣誉 Certificate and License





炉 体 Hot oil heater

## M 生产制造能力 Manufacturing Capacity

### 生产制造能力

我公司生产制造装备基地坐落于北京亦庄经济技术开发区，建有完善的质量保证体系，并获得ISO9001、ISO14000、ISO18000等认证证书。公司具有一、二类压力容器的设计和制造资质、有机热载体炉制造资质以及美国机械工程协会颁发的ASME“S”、“U”授权证书和钢印。从材料进厂到产品出厂，均有全程的质量跟踪和管理。加工设备精良，拥有各式普通机床、数控机床、加工中心、剪板机、卷板机、自动焊机、理化分析、金属光谱分析仪等完善的检测设备。

公司具备年生产大型管式加热炉上百台套的能力，拥有专有技术的螺旋盘管制造生产线，可以实现炉管的连续弯制成型和消除应力，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成为完成各种高难度机械加工、特种材料加工和制造大型非标设备的保证。

另外，公司拥有品种齐全的试验装置，具有国内领先的安全阀、高速泵、阀门、传热、喷嘴、液流、轴承、密封、低温、电子秤等十余个试验台；具有三维激光多谱勒测试系统、X光探伤设备等先进测试仪器，保证了科研生产的顺利进行。



炉 管 Heater coils



生产车间 Fabrication workshop

## R 研发能力 Research and Development

### 研发能力

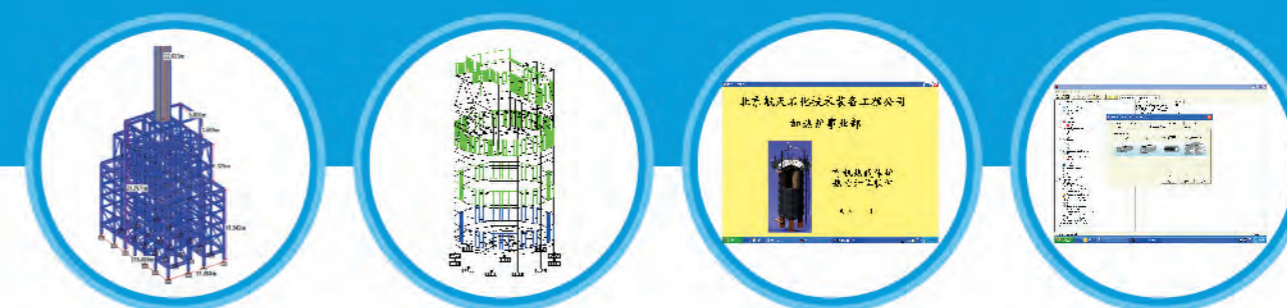
公司现有职工1215名，其中研究员占10%，高级工程师占20%，工程师占30%，中科院院士1人，部级以上专家和享受政府特殊津贴专家50人。

公司拥有自主开发的热气动软件CEC2.0，可以完成多种工艺介质的管内换热及反应和燃烧产物的分析计算；拥有自主知识产权的加热炉设计软件、燃烧器设计计算软件、工艺设计工具软件，可以完成燃烧技术的设计和模拟以及燃料系统的工艺设计计算；同时，公司还采用国际通用的加热炉设计软件、应力分析软件及强度分析软件，可以完成管式加热炉的炉型及热力参数设计和校核计算、炉管及配套管道的热应力分析以及加热炉的框架结构强度分析。

### Research and Development

A workforce of 1215 employees in BAPC, including 10% senior researchers, 20% senior engineers, 30% engineers, one academican of China Science Academy. 50 experts are ministerial level experts and awarded special government allowance.

The heater division owns software with intellectual property rights including: thermodynamics and aerodynamics software CEC2.0, which can complete analysis and calculation of heat exchange of various kinds of fluids in heat exchange tubes and combustion products; burner design and calculation software, which can complete the design and simulation of combustion technology; process design tool software, which can complete process design and calculation of fuel system. International common used software also are used, such as heater design software, stress analysis software, and strength analysis software, to complete thermodynamic design and verification calculation, thermal stress analysis of heater tube and process pipes, and strength analysis of steel structure.



### Manufacturing Capacity

The fabrication center of BAPC is located in Yizhuang economic-technological development area, Beijing. BAPC has established an efficient and complete quality assurance system and has been awarded certificates including ISO 9001, ISO 14000 and ISO 18000. BAPC is qualified for the design and fabrication of pressure vessel of the first and second category, having the manufacturing license of hot oil heater, and also the certificate of ASME "S" and "U" stamp issued by America Society of Mechanical Engineering. The quality control system operates effectively in the whole process from material procurement to product delivery. BAPC has a range of sophisticated processing equipment and test apparatus including various machine tool, numerical control machine tool, processing center, guillotine shear, plate bending machine, automatic welding machine, physical and chemical inspection analysis, and alloy PMI analyzer, etc.

BAPC can produce hundreds of large-scale heaters annually. It owns a specialized spiral coil tube bending production line. The line can continuously bend tubes and relieve stress simultaneously. The advanced equipment which have been used for aerospace equipment manufacturing, such as large-scale punch forming equipment, special welding equipment and high-precision machining equipment, now guarantee the heater division to complete difficult machining work, special material processing and large non-standard equipments manufacturing.

More than ten sets of test-bed of safety relief valves, high-speed pumps, valves, heat transfer, nozzles, liquid flow, bearing, sealing, low temperature, and electronic weighing apparatus, advanced test apparatus as 3-D Doppler Laser test system and X-ray photographer device are used for the inspection of products.



# 工程总包及技术服务能力 Project EPC & Technical Services

## 工程总包能力

公司拥有强大的燃烧和热能技术背景及系统集成能力，专业的工程技术及高素质的项目管理队伍，可以为用户提供管式加热炉项目的方案论证、详细计算、工程设计、原料采购、工厂制造、现场施工、调试投运、售后服务等全过程总包服务，为用户打造精品工程。

公司拥有专业的工程技术服务及施工队伍，具有丰富的大型管式加热炉现场施工组织的经验，至今已成功研制并完成了几百台套管式加热炉系统的开车调试工作。

公司拥有严格、健全的售后服务体系，可以为用户提供项目工程指导、技术培训、操作培训以及贯穿产品寿命期的终身技术服务。及时、周到、准确的服务获得客户真成的信赖和高度评价，航天加热炉的品牌在业内具有广泛的知名度和良好的信誉。

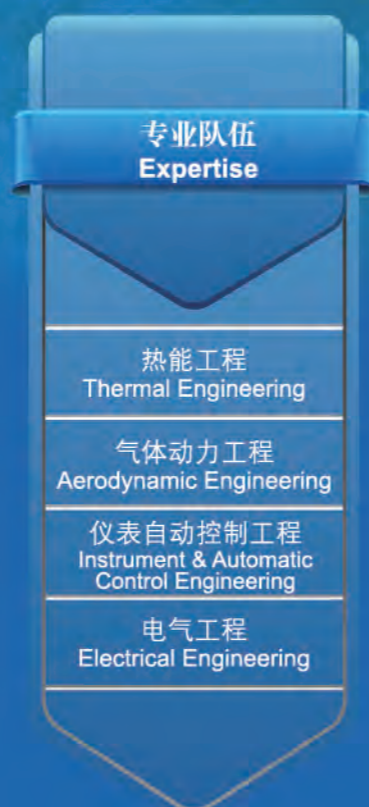
## Project EPC

Based on the rich experience in integrating technology of combustion and thermodynamics, BAPC provides project cycle services including project conceptual study, detail calculation, engineering design, material procurement, workshop fabrication, site construction, commissioning and startup, after-sale service for heater products.

BAPC has a professional staff for service of engineering and site construction, and has rich experience in project management of site construction. Hundreds sets of heaters have been successfully startup.

Service includes project engineering guidance, technical training, operation training and technical services throughout the life cycle of products. BAPC continues to be acknowledged for industry recognition and good reputation for its timely and excellent services.

## 北京航天石化可以为您提供 BAPC provides services of



为国内外的客户提供全方位的服务!

Provide excellent and exceeding expectations service for domestic and overseas clients



国际工程施工现场吊装  
International Lifting On Site



国内工程施工现场吊装  
Domestic Lifting On Site

# 导热油炉系统 Hot Oil Heater System



导热油炉系统  
Hot Oil Heater System

## 导热油炉系统介绍

我公司可以承担燃油、燃气、油气混烧以及燃水煤浆的导热油炉供热单元系统的工程设计和成套设备供货。燃料可以适应重质油、轻质油、装置附产油等液体燃料以及天然气、瓦斯气、干气、水煤气、焦炉气、氢气等气体燃料，还可实现油气混烧无扰动燃料切换，并可以根据不同的燃料、不同的炉型设计燃烧器及燃烧控制系统，也可以提供以水煤浆为燃料的导热油炉系统和电加热导热油炉系统。

我公司可根据用户的工艺系统要求设计高温、低温、液相、气相导热油循环系统，为用户提供安全、合理、经济的导热油供热系统方案，并可提供以导热油为热源的蒸汽发生器及配套系统。

我公司提供的导热油炉系统目前已经形成50万大卡/小时~4000万大卡/小时(582kW~46520kW)系列，并且可根据用户的要求设计生产更大型的导热油加热炉，可以提供撬装单元设备及热媒站总包工程。

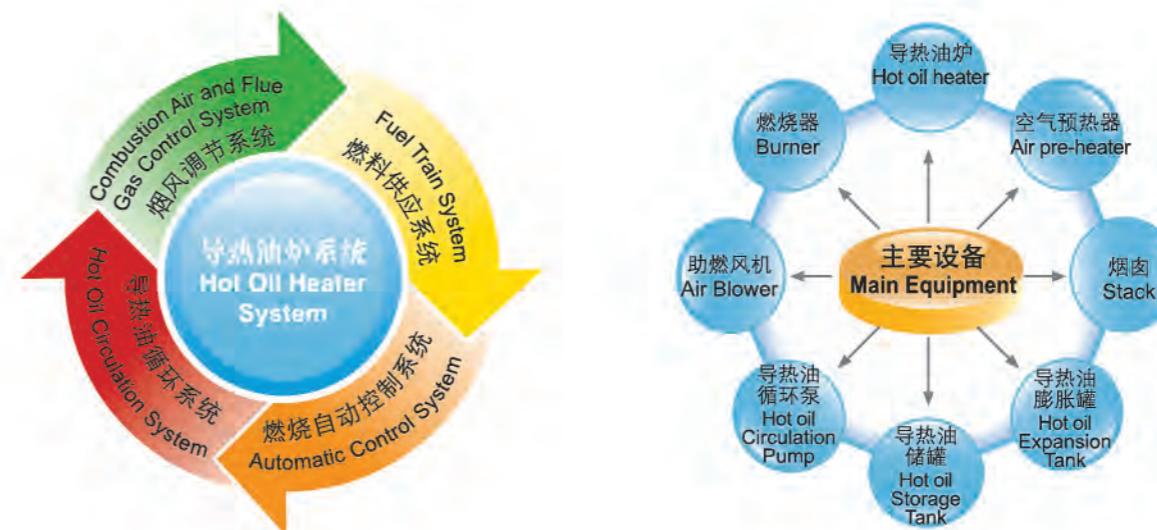
## Introduction Of Hot Oil Heater System

BAPC can provide engineering design, fabrication of hot oil heater package. The heater can be fuel oil fired, gas fired, coal water mixture fired, dual fuel oil & gas fired, including liquid fuel like heavy oil, light oil and process oil; gas fuel like natural gas, coal gas, dry gas, water gas, coke oven gas and hydrogen, etc. The dual fuel fired burner is capable of bumpless switchover between fuels. Burner and burner management system can be specifically designed based on various kinds of fuel or different heater type. Hot oil heater can be designed to use coal water mixture as fuel. Electric hot oil heater also can be designed and supplied.

BAPC can design hot oil circulation system of high temperature, low temperature, in their liquid phase or vapor phase based on the process requirements of clients. Safe, reliable and cost-efficient hot oil system can be designed by BAPC to provide heat energy to clients, as well as steam generator and equipped system, which uses hot oil as heat source.

The heat absorption of hot oil heater products covers from 0.5MKcal/h~40MKcal/h (582KW to 46520KW). Larger hot oil heater can be designed and manufactured according to the requirements of clients. Equipment in skids and package EPC can be provided.

## 导热油炉系统主要设备 Main Equipment in Hot Oil Heater System

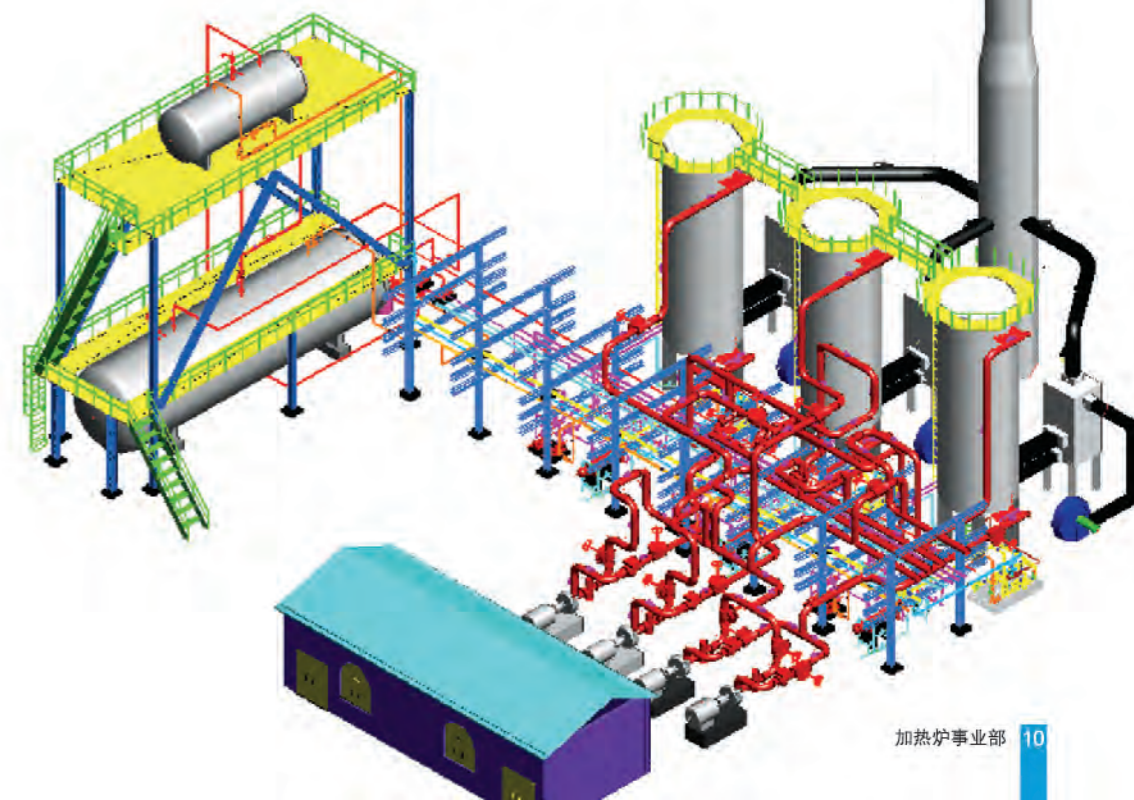


## 导热油炉系统功能特点:

- ▲ 为热用户提供满足负荷要求的稳定的高温热源;
- ▲ 能够精确而均匀地控制导热油温度，精度可达 $\pm 1^{\circ}\text{C}$ ;
- ▲ 实现导热油炉系统的负荷连续自动调节;
- ▲ 实现导热油非正常工况的安全报警及联锁保护;
- ▲ 采用空气预热器回收烟气余热，提高运行热效率;
- ▲ 实现装置的全自动运行。

## Functional Characteristics of Hot Oil Heater System

- ▲ Supply a steady high temperature heat source to clients at required heat absorption rating.
- ▲ Accurate and uniform control of hot oil temperature within  $\pm 1^{\circ}\text{C}$ ;
- ▲ Continuous and untended automatic control of thermal load;
- ▲ Complete alarm and trip safeguard in case of abnormal operating conditions;
- ▲ Waste heat recovery by air pre-heater to improve the thermal efficiency of system;
- ▲ Totally automatic operation of system.



### 导热油炉行业应用

我公司提供的导热油炉及导热油系统可以应用于聚酯化纤(PBT、PET)、原油输送、PTA、纺织、印染、造纸、LPG/LNG、树脂、甲乙酮、有机硅、粗苯精制、焦油加工、工程塑料等多种行业。

### Application Of Hot Oil Heater

The supplied hot oil heater products and hot oil system are used in the fields of polyester fiber (PBT, PET), crude oil transportation, PTA, textile, printing and dyeing, paper making, LPG/LNG, resin, MEK, organic silicon, crude benzene refining and engineering plastics, etc.



10万吨苯加氢装置导热油炉、加热炉  
Hot oil heater and chemical heater for 100,000 tons benzene hydrogenation plant

### 导热油炉典型业绩

### Reference List of Hot Oil Heaters



辽阳石化60万吨PTA装置4X1200万大卡/小时热媒站  
4 sets of 12Mkcal/h hot oil heater station for 600,000 tons PTA plant of Liaoh Petrochemical Corp.



新疆天利高新甲乙酮装置900万大卡/小时导热油炉  
9 Mkcal/h hot oil heater for MEK plant, Tianli Hi-tech Corp., Xinjiang

### 导热油回收燃气轮机余热系统 Gas Turbine Waste Heat Recovery Unit of Hot Oil system



上海高桥分公司20万吨/年ABS装置 3X300万大卡/小时热媒站  
3 sets of 3Mkcal/h hot oil heater station for 200,000 tons/y ABS plant of GaoQiao Petrochemical Corp., ShangHai Sinopec



浙江桐昆集团聚酯工程7X1000万大卡热媒站  
7 sets of 10 Mkcal/h hot oil heater station for polyester plant, Zhejiang Tongkun Group.



# I 国际合作项目 International Project



印度JBF热媒站现场  
India JBF hot oil heater station

近年来，公司在国际化的道路上不断前进，同国外知名工程公司及设计院保持着良好的合作，公司的加热炉产品在福陆（FLOUR）、德希尼布（TECHNIP）、福斯特惠勒（FOSTER WHEELER）、道康宁（DOW CORNING）、帝斯曼（DSM）等公司均建立了良好的业绩，得到客户的一致好评。

另外，公司具有美国机械工程协会颁发的ASME“S”、“U”授权证书和钢印，加热炉及其配套产品出口至印度、阿联酋、巴基斯坦、泰国、委内瑞拉、孟加拉等国家，成套系统均已顺利开车投产。

## Cooperation Experience with Global Engineering Corporation

In recent years, BAPC continually improves its internationalization practices. As part of this ongoing improvement, BAPC experiences succeeding-together cooperation with notable engineering cooperation, including FLUOR, TECHNIP, FOSTER WHEELER, DOW CORNING, DSM and etc.

The hot oil heater products are awarded the certificate of ASME “S” and “U” stamp issued by America Society of Mechanical Engineering. The heater products are supplied to global clients like India, U.A.E., Pakistan, Thailand, etc. and have been successfully put into operation.



巴基斯坦聚酯工程装置  
Polyester plant in Pakistan



阿联酋30万吨聚酯工程  
300,000 tons Polyester project in U.A.E



委内瑞拉重油加热炉  
Heating furnace of Venezuelan heavy oil unit



巴基斯坦HBP热媒站现场  
Pakistan HBP hot oil heater station

国际工程公司合作项目

Cooperation Project with Global Engineering Corporation



法国德西尼布宁夏哈纳斯1500万大卡/小时LNG加热炉项目  
France Technip Ningxia Kanas 15 Mkal/h LNG heater station project.



美国福斯特惠勒金陵帝斯曼导热油炉项目  
American Forster Wheeler Jinling DSM hot oil heater project



泰国PPT热媒站现场 Thailand PTT hot oil heater station



美国福陆15万吨多晶硅超大负荷导热油炉项目  
American fluor 150000 tons of polysilicon large load oil heater project



加热炉单元总包工程（内蒙伊泰集团16万吨/年煤制油工程）  
Heater package EPC project (Inner Mongolia yitai group  
160000tons/y coal-to-oil project)



加热炉单元总包工程（山西南耀15万吨煤焦油加氢工程）  
Heater package EPC project (Shanxi Nanyao group 150000tons/y coal-to-oil  
Hydrogenation project)

## T 管式加热炉 Tubular Heater

### 管式加热炉

作为专业的加热炉设计制造供应商，公司集多年的设计研发、工程实践、系统集成、施工组织经验，通过采用自主研发的热力计算软件以及国际通用的热力计算软件、流场/温度场模拟软件、应力分析软件、结构分析软件，为用户提供圆筒炉、方箱炉、梯台炉等多种加热炉单元工程，可以以交钥匙工程方式承接大型加热炉单元工程总包。可以根据用户提出的各类加热炉单元工程需求，提出加热炉燃烧工程的系统解决方案。

### Tubular Heater

BAPC is a professional heater manufacturer and supplier, having rich experience in the design, research and development, engineering practice, system integration and construction management. BAPC uses proprietary thermodynamic calculation software, fluid stream field/temperature field simulation software, stress analysis software, and structure analysis software for the design and engineering of various types of heater, including cylindrical heater, squared heater, step heater etc. BAPC also serves as package EPC contractor on large-scale heater projects. BAPC offers a solution of heater and combustion management meet its clients' unique project needs.

### 行业应用

公司研制生产的管式加热炉产品已经广泛的应用于炼油、乙苯、丙烯酸、醋酸、甲醇、苯加氢、焦油、沥青、乙炔、合成氨、煤制油、煤制烯烃、工程塑料、有机硅、环境保护等各个行业。

### Industry Application

The tubular heater products have been widely applied in diverse industries, such as oil refining, ethyl benzene, acrylic acid, acetic acid, methanol, benzene hydrogenation, tar, asphalt, acetylene, synthetic ammonia, coal-to-oil, coal-to-olefin, engineering plastic, organic silicon, environment protection, etc.



云南大为10万吨/年粗苯精制加热炉  
Heater for 100,000 t/y crude benzol refining project of Yunnan Dawei



四川维尼纶天然气制乙炔项目天然气及氧气加热炉  
Natural gas heater and oxygen heater for natural-gas-to-ethanol project of Sichuan Vinylon Plant



石家庄金石集团合成氨项目加热炉  
Heater for synthetic ammonia project of Shijiazhuang Jinshi Group



沥青改制项目加热炉  
Heater for asphalt upgrading project



河南龙宇50万吨甲醇工程蒸汽过热炉  
Heater for 500,000 t/y methanol plant of Henan Longyu Group



河北邢台旭阳焦油加工项目焦油管式炉  
Tubular heater for tar processing project of Xingtai Coal Chemical Co., Ltd., Xu Yang, Hebei.



内蒙伊泰120万吨煤制油尾气制氢加热炉  
Inner Mongolia yitai group 1200000tons/y coal-to-oil gas heating furnace for hydrogen production



华北石油管理局苯乙烯项目循环苯加热炉  
Benzene-cycling heater for benzene styrene project of North China Petroleum Administration Bureau



重庆万盛60万吨/年醋酸工程  
chongqing wansheng 600000tons/y acetic acid projec



神华宁夏煤基烯烃项目再生气及氮气加热炉  
Regeneration gas heater and nitrogen heater for coal-based olefin project of Shenhua Group



陕西集团20万吨/年甲醇工程  
shanjiao group 200000tons/y methanol project



内蒙庆华20万吨/年甲醇装置预热炉  
Pre-heating furnace for 200,000 t/y methanol plant of Inner Mongolia Qinghua Group



国电赤峰合成氨项目加热炉  
Heater for synthetic ammonia project of Guodian Chifeng Group



吉林通化合成氨项目加热炉  
Heater for synthetic ammonia project of Jilin Tonghua Group



山东隆盛10万吨/年甲醇装置预热炉  
Pre-heating furnace for 100,000 t/y methanol plant of Shandong Longsheng Group



晋煤华昱100万吨甲醇清洁燃料再生气加热炉  
Regeneration methanol clean fuel heating furnace for 1000,000 t/y of Jinmeihuayu Group



山东荣信25万吨/年甲醇装置预热炉  
Pre-heating furnace for 250,000 t/y methanol plant of Shandong Rongxin Group



晋煤天庆合成氨项目加热炉  
Heater for synthetic ammonia project of Jinmei Tianqing Group



内蒙东华60万吨甲醇工程蒸汽过热炉  
Heater for 600,000 t/y methanol plant of Inner Mongolia Donghua Group



内蒙古大唐克什腾煤制LNG加热炉  
Heater for coal furnace LNG of Inner Mongolia Datang Keshiketeng



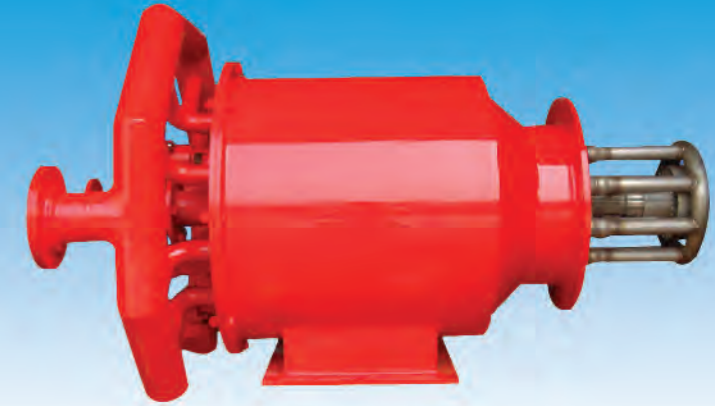
燃油燃烧器 Fuel oil fired burner



燃气燃烧器 Fuel gas fired burner



气气联合燃烧器 Dual fuel(gas and gas) fired burner



油气联合燃烧器 Dual fuel(oil and gas) fired burner

## B 燃烧器 Burner

### 燃烧器

我公司研制生产的系列化燃油、燃气、油气联合、气气联合、废液废气燃烧器在石化、冶金、环保、煤化工、炼油等行业得到广泛应用，并成功替代国外产品，深受用户好评。

公司可为用户设计专有燃烧器，以实现工艺尾气、废气的回收再利用，低压低热值燃料的燃烧。

我公司可以设计的燃烧器类型有：

**燃油燃烧器：**可以适应重质油、轻质油、装置附产油等多种液体燃料；

**燃气燃烧器：**可以适应天然气、瓦斯气、干气、煤气、氢气等多种气体燃料；

**油气联合/气气联合燃烧器：**可以适应多种燃料的组合并实现无扰动切换；

**低氮氧燃烧器：**可以实现低NO<sub>x</sub>燃烧，达到节能减排环保的要求。



引射式气体燃烧器 Injection gas burner

### Burner

Various series of burners including oil fired burners, gas fired burners, dual fuel gas and gas fired burners, multifuel gas burners, waste liquid or off gas burners, have been widely applied in a variety of industries, such as petrochemical, metallurgy, environment protection, coal chemistry and oil refining, etc. Successful performance was evident with the awards of contracts which could possibly use imported brand burners.

The burner can be specially designed to burn tail-gas for waste energy recycle, as well as low-pressure low LHV fuel.

Burners types:

**Oil fired burners:** suitable for various liquid fuels, such as heavy oil, light oil, and device process oil, etc.

**Gas fired burners:** suitable for various gas fuels, such as natural gas, coke oven gas, dry gas, coal gas and hydrogen, etc.

**Dual fuel(Oil/gas) /(gas and gas) fired burners:**

suitable for various mix fuels and bumpless switch-over on-stream function is provided.

**Low NO<sub>x</sub> burners:** Low NO<sub>x</sub> combustion is to meet requirements of emission for purpose of environmental protection.



## E 喷射器 Ejector

### 喷射器

我公司喷射真空技术起源于液体火箭发动机推力室尾喷管技术以及航天高空模拟试验台技术，经过三十多年的发展，在喷射器及喷射真空系统等产品的工艺设计、结构设计及性能优化方面积累了丰富的工程经验，形成了完善的计算和试验方法，实现了各种产品类型的全面覆盖，包括多种介质类型的喷射器（气体抽气体、气体抽液体、液体抽气体、液体抽液体、气体或液体抽固体等）、可手动或自动调节的可调节喷射器、各种真空度的喷射真空系统、文丘里洗涤器、减温器、混合喷嘴等，广泛应用于化工工艺过程中，研制成功后，应用于PBT、PET、PTT聚合装置中的真空系统在国内具有领先的技术优势。



喷射器 Ejector

### Ejector

The ejector technology of BAPC originates from the simulation technologies of rocket engine nozzle and aerospace high vacuum experiment platform. With over 30 years' development, BAPC has accumulated rich experience and test methods in process design, structure design and performance optimizing of the ejectors products such as ejectors and ejectors (gas-gas, gas-liquid, liquid-air, liquid-liquid, air/liquid-solid), adjustable ejectors with manual or auto-adjustment, ejector vacuum system with various vacuum degrees, venture scrubbers, venture scrubbers, desuperheaters and jet mixer, which could be widely applied in the chemical process. After the successful development, the vacuum system applied in PBT, PET and PTT polymerization equipment has the leading technical advantage in china.

# 工程改造 Engineering Reconstruction

30多年燃烧领域的工程经验造就了我公司在加热炉工程改造上的专业特长，技术成熟可靠，投资少，见效快，节能效果好，适合于新老装置加热炉的挖潜增效，是提高热效率的有效途径。公司先后承接了上百套加热炉的工程改造，在中石化、中石油等各大公司得到大力推广，取得了巨大的经济和社会效益。

BAPC's professional expertise in complex reconstruction engineering of heater projects provide clients with solutions to increase the efficiency of existed device at lower cost and in a timely completion. BAPC successfully executed reconstruction projects for over a hundred sets of heaters, which are recognized as with remarkable capital profit sample projects by Petrochina and Sinopec.

## 我公司可以为用户提供的工程改造内容：

**燃料替代：**可完成燃油改燃气、多燃料混合燃烧及废气处理等技术改造，并可实现加热炉系统的余热回收、节能降耗。

**高效燃烧：**公司自主研发的各类燃烧器可实现精确的燃烧组织，减少氮氧化合物的排放，提高加热炉的环保性能。

**精确控制：**先进的燃烧自控技术处于国内领先水平，可以完成仪表、自控、电气系统等核心技术的更新及服务，确保加热炉安全稳定运行。

## Reconstruction Engineering Experience includes:

**Fuel Substitute:** use gas as alternative fuel of oil, multi-fuel combined burning, exhaust gas burning; waste heat recovery unit system for energy-saving.

**High efficiency combustion:** Burners developed by BAPC can achieve exact combustion management, less NOx emissions and improvement of heaters performance with respecting to environmental protection.

**Precise control:** As the leadership in domestic markets, the advanced automatic control technology can implement the innovation of core technology for configuration and program of BMS system including instrumentation, automatic control, and electrical systems, thus to ensure high availability and reliability of heater operation.

公司可以完成加热炉技改项目从可行性论证到工程设计及设备、仪表供货、调试开车的整套工程服务工作。

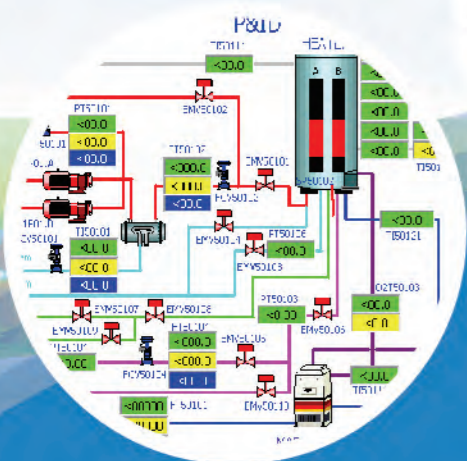
BAPC takes on the toughest challenges in reconstruction project and provides a full range of feasibility study, supply of package including equipment and instrument, and the service of commissioning and startup.



控制柜  
Control Cabinet



上位机  
PC station



PLC控制画面  
PLC Control Screen



设备节能改造  
Equipment Energy-saving  
Engineering



燃料供应系统撬块  
Fuel Train System in Skid



燃烧系统改造  
Combustion System  
Reconstruction



火焰检测器  
Flame detector

# C 我们的客户 Clients List

