

KAIQUAN PUMP GROUP



KAIQUAN PUMP (GROUP) CO., LTD.

Empower Water Empower Future

Technology-Led enables every organization to achieve resource conservation and efficient utilization

Water is an indispensable ecological element and a scarce natural resource, with less than 3% of the world's fresh water meeting the needs of all human ecosystems, and with uneven distribution of water resources and regional economic development, it is becoming increasingly costly to exacerbate the great contradiction in the escalation of demand for this basic resource.

Kaiquan is committed to deepening the research and development of hydraulic and pump and water-related systems, leading the way in efficient production with green technology innovation, and directly reducing the cost of water resources utilization, promote the upgrading of energy efficiency in the industrial system, effectively compensate for the neglect of traditional technology to save energy and efficient use of resources, benefits the green future of the entire industry and people's livelihoods.

CONTENTS

01

FOREWORD

About Kaiquan

03

02

INTRODUCTION

Development History

05

Industrial Park

07

Market Area

09

Cooperation Brand

10

03

TECHNICAL

Technology Center

11

Expert Team

13

Achievements In Scientific Research

14

Research and Development Facilities

15

Manufacturing Capacity

17

04

MANUFACTURE

Testing Platform	19
Inspection Equipment	21
Quality Assurance	22

05

SERVICE

Service Introduction	23
Service Flow	24
After-sales Service	25

06

PRODUCTS&CASES

Product Display	27
Cases Project	35

ABOUT KAIQUAN



The total revenue of the Kaiquan Group is
RMB **7** billion yuan



5 industrial parks



23 branches



600⁺ local offices



10⁺ overseas institutions



Covering an area of **670,000** m²



The Group's employees of **6000⁺**

Shanghai Kaiquan Pump (Group) Co., Ltd. was established in 1995, is a pump, water supply equipment and pump control equipment manufacturing enterprise, whose product lines cover pump products of seven fields in nuclear power/power, petrochemical, steel metallurgy, mining coal, construction, municipal affairs, water conservancy, nearly 100 series.





Kaiquan has advanced, complete manufacturing equipment system, the whole process traceable quality management system and the industry's leading product testing platform, for domestic and foreign many well-known brands to provide high-quality, efficient product services. At present, it has 5 industrial parks, 23 branches, more than 600 local offices and more than 200 after-sales service outlets, covering the whole country, has a rich economy, with the technical frontier of professional scientific research team, is a technology innovation-oriented industry

well-known enterprise. Facing the future, Kaiquan will continue to "Lead the rise of China's pump industry" as the mission of development, and continue to deepen the hydraulic research and pump and water-related system technology-led, with green technology innovation to bring high-efficiency production model, directly reduce the cost of water resources, drive the industrial system of energy efficiency upgrading, to shape national brands, into the World Pump Industry Top Ten!

1995

Kaiquan establishes a direct sales model for the pump industry

1996

The national new product of KQL type vertical pipe single-stage centrifugal pump was developed

1998

Kaiquan Shanghai Industrial Park was completed and put into production

2002

Shenyang Kaiquan Petrochemical Pump Co. , Ltd. was established Shijiazhuang Kaiquan Impurity Pump Co. , Ltd. was established



DEVELOPMENT HISTORY

2010

Nuclear two-stage pump thermal shock test bench passed the appraisal
Mechanical research experiment, mechanical test bench and high-precision closed test bench were built
The first 300MW nuclear two-stage high pressure safety injection pump of Kaiquan passed the appraisal

2014

CAP1400 nuclear power conventional island primary feed pump (including pre-pump), and circulating water pump passed the appraisal

2015

Salt Solution Flow Theory and Transportation Equipment Key Technology Research was awarded the second prize of Science and Technology Progress Award awarded by the Ministry of Education

2017

Kaiquan Nuclear Power Products entered into the UK Hinkley Point Nuclear Power Plant

2018

Lanzhou Technology Center and Zhenjiang Technology Center was established

2000

Kaiquan Technology Center was named
“Shanghai Enterprise Technology Center”

2001

Kaiquan established a domestic pump
industry-scale direct sales system and
improved the customer service system

2002

Kaiquan Zhejiang new factory was put into production

2007

Submersible pump theory and key technology research and application
Second prize of the State Science and Technology Progress Award issued by the State Council

2008

Acquisition of Hefei Sanyijianghai Pump Co., Ltd.
Hefei Kaiquan Motor & Pump Co., Ltd. was established

2011

Obtained the national civil nuclear safety equipment
design and manufacturing license

2012

Vertical fully adjustable axial flow pump unit with impeller diameter of 4.5m for the South–North Water
Transfer Project; AP1000 residual heat removal pump, important plant service pump, nuclear island fire
pump, one million kilowatt unit condensate pump and water ring vacuum pump passed the appraisal

2016

The key technology research and engineering application of the high-efficient conveying and pushing equipment for environmental protection project was awarded the second
prize of Science and Technology Progress issued by the Ministry of Education
The research and application of energy-saving key technologies of super-large mixed-flow pump and axial-flow pump were awarded the first
prize of China Machinery Industry
Science and Technology

2020

Nuclear power products won the
bidding of the projects of Tianwan
Nuclear Power Plant, Xudabu
Nuclear Power Plant

2021

Production system upgrade intelligent
manufacturing

2022

Kaiquan brand culture formed a
comprehensive upgrade

2023

Kaiquan was rated as “National
Enterprise Technology Center”

INDUSTRIAL PARK

Shanghai Industrial Park — Science and technology innovation base

- 61 batches of national industry standards
- 700+ technology patents

As the headquarters of the Group, Shanghai Industrial Park is mainly responsible for the production and manufacture of single-stage pumps, Mult-Stage pumps, multi-stage pumps, nuclear pumps/heavy-duty pumps, etc., to meet the nuclear power, fire, water supply and other fields of supply demand. In recent years, in order to greatly improve the level of automation in the workshop, the Park has spent RMB hundreds of millions of yuan to upgrade its information, intelligent and digital manufacturing, has built many advanced automated production lines, and ensures product accuracy and quality, has been listed "China's Machinery Industry Top 100" and "Shanghai Top 100 Enterprises" for many years.

As the experimental base of the Group's cutting-edge technology research and development, Shanghai Industrial Park has gathered a large number of R&D personnel who are willing to study and continue to innovate. They are focusing on key core technologies and the transformation of achievements, constantly breaking through the major issues of water resources utilization and energy efficiency upgrading, and striving to maximize the energy efficiency application of pumps and pump systems, has been approved "Post-doctoral Research Workstation" and "Shanghai Enterprise Technology Center" is a strong engine for the Group's innovation and development.



Hefei Industrial Park — green factory

- Covering an area of 270,000 m²
- Sales revenue for RMB 1.37 billion yuan / year

The predecessor of Hefei Industrial Park was the designated production of motor, submersible pump professional manufacturer of the former Ministry of Machinery Industry. innovates, forges ahead, completing 1343 product specifications of submersible sewage pump, submersible shaft mixed flow pump and high and low pressure submersible motor, etc., winning many honorary titles, such as "Enterprise Technology Center of Anhui Province" and "Hefei Top 100 High-tech Enterprises". The Park is a rare domestic integrated manufacturing enterprise that can produce both medium and high pressure submersible pumps and submersible motors.

In addition, the Hefei Industrial Park has been committed to the construction of energy-saving enterprise, continuously optimizing production process and equipment, and gradually upgrading to more efficient intelligent equipment, reducing costs and increasing efficiency, awarded the honorary title "Outstanding Contribution to Emissions Reduction Enterprise". At the same time, a number of new low-carbon environmental protection facilities have been built in the Park to enhance the clean efficient energy use and sewage collection and treatment rate of the Park, providing a leading example for the digital transformation and sustainable development of the domestic pump industry.



Zhejiang Industrial Park—— Science and technology innovation base

The annual output is **100,000** sets
200+ employees

As the Group's first place of origin, Zhejiang Industrial Park deepened the field of single-stage pumps and chemical pumps for many years, created nearly 700 product specifications, to meet the needs of air conditioning, heating, sanitary water, chemicals, oil transportation, medicine and other fields, has been "National High-tech Enterprise" and other honorary titles.

As the first intelligent digital factory of the Group, Zhejiang Industrial Park takes the lead in transforming and creating a new situation. It uses information technology such as Internet of things and cloud computing to break through data islands between systems and realize the intelligent operation of production and marketing coordination. At the same time, Zhejiang Industrial Park also imported intelligent precision processing equipment from Europe, Japan and other places, the establishment of a number of flexible production lines for the product quality and efficiency of lean production.



Shijiazhuang Industrial Park——mining pump base

Special Casting Application Center

As a domestic production base of large-scale mine pumps, Shijiazhuang Industrial Park has advanced mine pump R&D Center, international cutting-edge 3D intelligent manufacturing center, large resin sand casting, silica sol precision casting, digital machining workshop and assembly workshop, as well as large-scale high-precision pump test center, testing and inspection physical and chemical laboratory, and has participated in the preparation of slurry pump industry standards, "High-tech Enterprise," "Lanzhou University of Technology Practice Education Base," and many other honorary titles.

The Park can produce cast iron, cast steel, wear-resistant and corrosion-resistant alloy, dual-phase steel and other materials of medium and large-scale casting, rapid molding of complex and diverse parts, widely used in aerospace, nuclear power, thermal power and other important fields, with excellent product quality and performance, the Shijiazhuang Industrial Park has successfully participated in a number of major domestic and international projects, including the Hebei Construction & Investment Group Co., Ltd. and other investment projects, the power plant in Indian and the Kyrgyz Power Plant, etc.



Shenyang Industrial Park—— standard chemical pump base

Professional deepening for **20** years
600 product specifications

As an important production base of the Group's chemical pump, Shenyang Industrial Park has been deepening and producing chemical process pump and weak corrosive pump for nearly 20 years, and has created nearly 600 product specifications, it is applied in many fields such as petroleum, chemical industry, smelting, mining, electric power, pharmacy and so on. During the period, in order to further enhance the safety, reliability and corrosion resistance of the products, the Park has introduced more than 260 advanced production and testing equipment, and established large-scale pump test bench and physical and chemical laboratory, etc., to fully meet the product from raw material selection to the finished product factory inspection needs of multiple process.

With strong technical strength and rich experience in product and service, Shenyang Industrial Park has a good reputation in the industry at home and abroad, and successfully won the tender for a number of major projects at home and abroad, including Xinjiang Faquan Energy, Kazakhstan vulcanization plant, Panjin Haoye Chemical Co., Ltd. and Fujian Baihong Petrochemical Co., Ltd., etc, win the high trust and praise of customers.

MARKET AREA



Industrial and mining applications

Energy conservation and efficient use of water systems, to promote the green development of industrial and mining enterprises

Kaiquan has completed more than 3,440 energy-saving renovation projects for its customers in the fields of heat supply, steel metallurgy, water plants and sewage treatment, and electricity. The total energy-saving capacity is estimated to reach 1,582 million kwh, saving 475,000 tons of standard coal and reducing carbon dioxide emissions by 1.292 million tons.



Architectural applications

Advocate green building and organic lifestyle, so that families enjoy more comfortable and safe water

Construction products are the leading and advantageous products of Kaiquan, no matter what residences, hotels, business buildings, subways, airports and other public facilities, Kaiquan can meet their water supply and drainage, fire, air conditioning and heating and other needs. As an active promoter of building pumps, Kaiquan is committed to providing users with cleaner, healthier and more efficient water services.



Municipal water

Improve public water infrastructure to serve the whole life cycle of sustainable development of cities and towns

As a leader in domestic water environmental treatment technology, Kaiquan has participated in key national hydraulic engineering such as South-North Water Transfer Project and the Yellow River Diversion Project, or flood drainage, drainage system quality and efficiency, Kaiquan can provide efficient, energy-saving, environmental protection of municipal water solutions.



Major products

With hydraulic research and efficiency innovation, Kaiquan can help major engineering projects and create new value for society

Kaiquan has been focusing on high-end pumps for nuclear power and thermal power for many years, and has created a series of high-quality, high-performance pump products and solutions, for the Tianwan Nuclear Power Plant, Xudabu Nuclear Power Plant, Hinkley Point Nuclear Power Plant, Huangdao Oil Depot and other major projects to provide a reliable pump protection.



COOPERATION BRANDS

(part of the brands, ranking in no particular order)

Empower Water Empower Future



TECHNOLOGY CENTER



Industry authority recognition

Kaiquan Shanghai Technology Center was established in 2000, focusing on the R&D and production of high efficiency pumps, has been awarded many honorary titles, such as “National Enterprise Technology Center”, “National Intellectual Property Advantage Enterprise”, “Postdoctoral Research Workstation”, “Shanghai Enterprise Technology Center”, “Shanghai Pump Engineering Technology Research Center” and so on, is a strong engine of the Group's R&D and innovation.



Innovative R&D platform

The Group has R&D centers in Shanghai, Lanzhou, Zhenjiang, Hefei and Shenyang, and sets up mechanics, hydraulic, materials, basic research, major products, nuclear power, petrochemical, municipal water conservancy and other research and development fields.



Advanced test platform

The Technology Center has advanced test bench for thermal shock and performance, which can conduct thermal shock test for high pressure safety injection pump and other nuclear grade pumps, and has a professional pump mechanical research laboratory and mechanical test bench that can carry out the pump rotor dynamics, finite element strength calculation, pump stress analysis, fault diagnosis and mechanical testing; Also has a hydraulic model test bench for high-precision multi-function pump, and open-type test bench for large-scale pump, for product development and testing to provide a strong guarantee.



Echelon talent structure

More than 184 existing technical personnel, mainly by the domestic well-known pump experts professors, PhDs and masters, senior engineers, senior technologists, forming a creative thinking echelon talent structure, for the Group's nuclear power, thermal power and other high-end pump R&D to provide human resources guarantee.



Multi-technology consortium

In key R&D projects, such as nuclear power, thermal power and three chemical pumps, KAP cooperates with Jianda Institute of Fluid Machinery, Tsinghua University and Jiangsu University in hydraulic design, research and flow field analysis technical cooperation with Shanghai Nuclear Engineering Research and Design Institute on bearing boundary, rotor dynamics, seismic analysis and calculation; Cooperate with Shanghai Jiaotong University on bearing computing, nuclear engineering and other technologies to maximize the use of domestic and foreign technology resources and promote Chinese manufacturing to Chinese creativity.



Professional R&D equipment

CIMATOM three-dimensional CAD, CAM, CAE, FMS and other research and design software systems are provided in the Technology Center, a three-coordinate measuring instrument, a laser rapid prototyping instrument and a particle imaging testing system for PIV internal flow field were set up.



Achievements in scientific and technological innovation

Kaiquan has participated in the 61 batches of national, industry standards, access to more than 700 technical patents, including about 30 invention patents. In 2007, "Submersible Pump Theory and Key Technology Research and Promotion and Application" was awarded the second prize of National Science and Technology Progress. In 2010, The self-developed nuclear two-stage high pressure safety injection pump passed the major technical equipment development task of Shanghai Economic Commission. More than 30 major scientific research projects, nuclear power AP1000 primary cycle pump, and feed water pump passed the appraisal in 2014. Since 2018, a total of 5 projects have been awarded the "Shanghai Hi-tech Transformation Achievements Project", among them, "The Third Generation KQDQ Light Vertical Multi-stage Centrifugal Pump" was awarded the Hundred Best of Shanghai High-tech Achievements Transformation Project in 2022.

EXPERT TEAM



More than **1200** engineers and technicians



2 persons with the State Council allowance



5 professor level senior engineers



30 senior engineers



5 PhDs



66 masters

Wang yanhe



Professor level researcher, senior engineer

Enjoy the special government allowance issued by the State Council, with R&D, management experience of 32 nuclear power pumps, a hundred level talent of national "hundred million" talent project.

Wang zhewen



Professor level senior engineer

Professor level senior engineer. In 2007, he was awarded the title of the Top 10 Scientific and Technological Innovation Talents in Jiading District. In 2008 awarded the second prize of China's Machinery Industry Science and Technology. In 2011, he was awarded the Silver Award of Shanghai Invention, and made great achievements in the field of hydraulic design of ultra-low specific speed centrifugal pump. In 2022, he was awarded the title of "Shanghai Craftsman", with 20 patents of invention and utility model.

Xiao gonghuai



Professor level senior engineer

A member of Mechanical Engineering Committee of China General Machinery Industry Association, a member of Technical Committee of Pump Branch of China General Machinery Industry Association. In 2005, he was awarded the Outstanding Academic and Technical Leader in Jiading District. Publication of a total of 7 scientific papers, participated in the drafting of 4 national and industrial standards, access to 16 national patents and a number of ministry and provincial science and technology awards.

Lu hongzhong



Senior engineer

Long-term engaged in technology research and development of vane pumps and pump systems, a member of Pump and Pump Station Committee China Water Conservancy Institute, a member of China General Mechanical Standardization Committee. He has undertaken major national projects, Shanghai municipal research and development of major technology and equipment, and provincial-level scientific and technological achievements.

Wang huiming



Senior engineer

With a PhD in University of Stuttgart Engineering from Germany, he was awarded Shanghai Pujiang talents and the 14th batch of innovative talents from Jiading District in 2018. Presided over and completed a provincial-level scientific research project of Shanghai Science and Technology Commission in the hydraulic design of axial flow pump to achieve a number of theoretical and technical innovations. Developed the Kaiquan's software SCPWaSo.

Wang yuxin



Senior engineer

A member of the No.2 Committee of the Drainage and Irrigation Committee of the China Association for Standardization of Machinery Industry, a member of the no.8 Committee of the Standardization Branch of the China Society of Agricultural Machinery, a member of Youth Committee of China Mechanical Industry Standardization Technology Association; he was awarded the first prize of China Machinery Industry Science and Technology Award, the third prize of Jiangsu Province Science and Technology Award, the outstanding contribution prize of China General Machinery Industry Science and Technology Innovation Award, the second prize of Innovation Award of the 13th Invention and Entrepreneurship Award.

He min



PhD, senior engineer

She has been engaging in pump product development on the cavitation mechanism of double-suction pump and how to reduce the harm and so on. In October 2015, she was selected as the seventh batch of high-level innovators in Jiading District.

Li aixue



Senior engineer

He was awarded the third prize of Science and Technology Progress Award of Ministry of Mechanical Industry, and the Lanzhou Science and Technology Progress Award. Long-term responsible for design and process of feed water pump, stamping pump, condensate pump and long-axis pump.

Chen yinghua



Senior engineer

A member of Special Committee of Water Supply Equipment Branch of Industry Association. Since 1992, he has been engaged in the second technical work and has obtained dozens of patents and participated in the compilation of many trade marks. He has won many honors, such as the leader of Science and Technology in Jiading District, the 10th and 20th anniversary of Kaiquan.

Wang zhun



PhD, senior engineer

He has been engaged in the design and experimental research of vane pump and related fluid machinery for a long time, has won many provincial and ministerial science and technology achievement awards, and he has published many influential papers, leader of science and technology in Jiading District. The organization participates in the R&D of nuclear power primary feed water pumps, nuclear island Ditan pumps, submersible oil pumps and other products.

Wang Junhua



Senior engineer

A member of Drainage and Irrigation Sub-committee of China Agricultural Machinery Association, a member of Drainage and Irrigation Sub-committee of China Machinery Industry Standard Commission. Participated in the compilation of national standards such as "Submersible Axial Flow Pump", "Large and Medium Prefabricated Pump Station", "Closed Sewage Lifting Device" and "Technical Specification for Application of Sewage Lifting Device".

Shi Liang



Senior engineer

He has completed the design, drawing and trial-manufacture of the impeller of the second generation nuclear power primary pump, and the design and development of the AP1000 residual heat removal pump, auxiliary water pump and LNG sea water pump, etc. In 2017, he was awarded the China General Machinery Science and Technology Progress Prize.

ACHIEVEMENTS IN SCIENTIFIC RESEARCH

Empower Water Empower Future

61 batches of national industry standards

30 invention patents

700⁺ technical patents



R&D FACILITIES

Kaiquan has advanced scientific research platform, including the office of nuclear pump products, hydraulic laboratory, materials application laboratory, mechanical laboratory, intelligent products laboratory, new product trial-production department. Kaiquan uses CIMATOM's three-dimensional CAD, CAM, CAE, FMS and other design software systems, and uses professional CFD analysis software systems to fluid dynamics simulations, equipped with high-end equipment such as coordinate measuring instrument, laser rapid prototyping instrument and PIV internal flow field particle imaging test system, a series of precision test platforms, such as hydraulic model test bench, large-scale pump open-type test bench, cold-heat shock test bench and performance test bench, have been set up, for the products of lean production provides a strong intellectual support.



Cold and hot shock and performance test bench



Hydraulic model test bench for high precision multi-function pump



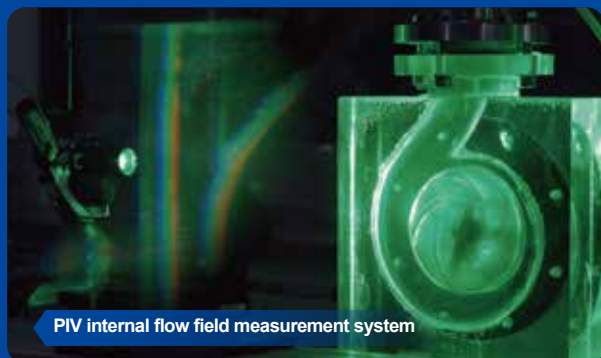
Performance experiment integrated console



Mechanical laboratory



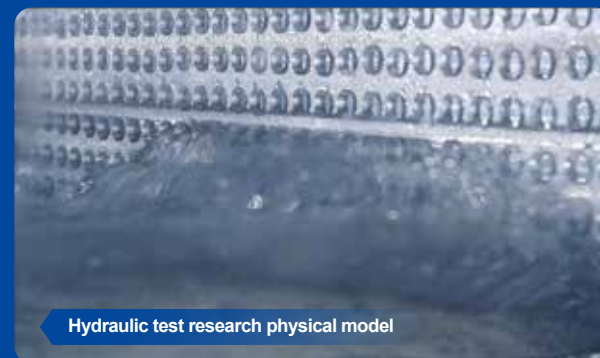
Materials application laboratory



PIV internal flow field measurement system



3D rapid scanning molding system



Hydraulic test research physical model

Kaiquan technology joint innovation maximizes the application of domestic and international technical resources, forming a diversified technology consortium. In key R&D projects such as nuclear power pumps, thermal power pumps, and three chemical pumps, technical cooperation in hydraulic design, research and flow field analysis with Jianda Institute of Fluid Machinery, Tsinghua University and Jiangsu University; Technical cooperation with Shanghai Nuclear Engineering Research and Design Institute on bearing boundary, rotor dynamics, seismic analysis and calculation; To carry out technical cooperation with Shanghai Jiaotong University in bearing calculation and nuclear engineering, etc.



Hydraulic optimization design of CFD pump body



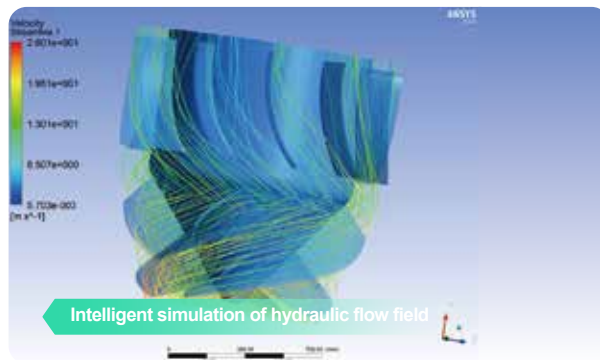
Dynamic demonstration of product modeling



CAE mechanical optimization design



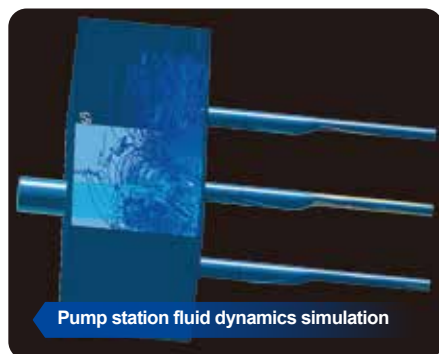
Product three-dimensional modeling design



Intelligent simulation of hydraulic flow field



Laser rapid prototyping instrument



Pump station fluid dynamics simulation



Torque calibration equipment



Large-scale pump test system for nuclear thermal power plant

MANUFACTURING CAPACITY

In order to accelerate the process of intelligent transformation and digital transformation of enterprise, Kaiquan has been spending a lot of money in recent years to import and update international advanced manufacturing and digital information equipment from Europe, Japan and other places, improve the precision and quality of products.



Six-axis five-linkage gantry milling and boring machining center



Heavy high precision vertical turning and milling center



DMG NHC6300 machining center



Mitsubishi gantry machining center



Automatic production line of submersible motor



DMG CLX550 impeller machining center



DMG NHX8000 machining center

The introduction of a large number of equipment makes Kaiquan in the production process to achieve a higher level of automation and production efficiency, through digital and intelligent mode of production, to further improve production efficiency and reduce enterprise costs, to create more reliable and high-quality products for customers.



Laser welding of stamping pump impeller



Three-coordinate inspection of pump body



Numerical control machining of impeller integral molding



CNC finish milling of nuclear pump components



Milling and boring of six-axis and five-linkage gantry



Stamping pump shaft cold extrusion one-time molding



CEBR impeller automatic balance



MAZAK CNC machining center



Stamping pump mid-section machining center

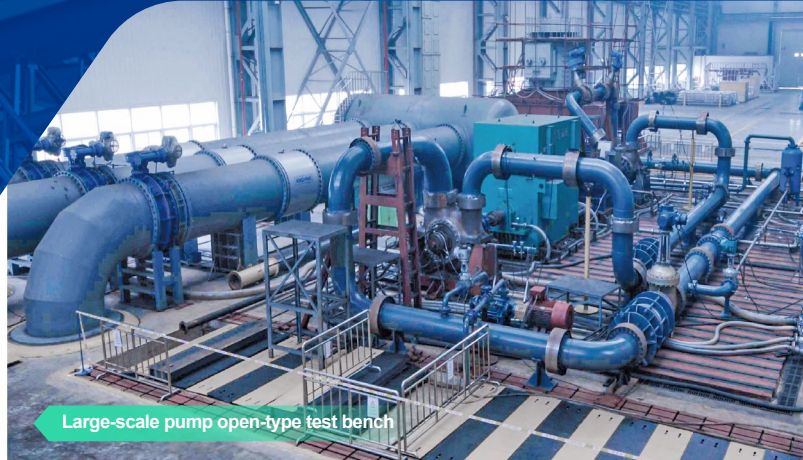


GROB C6 extrusion shaft machining center

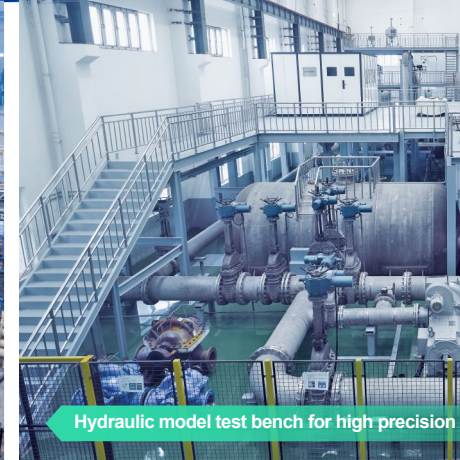


Five-axis high-speed milling machine

TESTING PLATFORM



Large-scale pump open-type test bench



Hydraulic model test bench for high precision

Open-type test bench for large pump

Maximum single hook lifting of **150** tons

Maximum test caliber of **4.5** m

The total investment of the test bench is RMB 100 million yuan, the total power distribution capacity is 35,000 V/38,000Kva, and the maximum single hook lifting weight is 150 tons, the maximum testing diameter is 4.5 meters of the large pump, the pool capacity is 13,000 m³, the water pool depth is 15 m, the matching voltage is 10kV/6KV/380V, the maximum direct starting power is 15000kW, the maximum frequency conversion starting power is 25000kW, 80% and 70% rated voltage step-down start-up test can be conducted. At the same time, the test pipeline system, the measuring instruments and the test methods used in the integrated performance laboratory, the overall test precision of the system can reach the level 1 precision of the corresponding national standard of pump test "Hydraulic Performance Acceptance Test for Rotary Power Pump Level 1, Level 2, and Level 3".

Hydraulic model test bench for high precision multi-function pump

The overall accuracy is **0.25** %

The test bench is mainly composed of central control room, constant temperature and humidity instrument room, AC and DC power distribution room, hydraulic circulation system and four in-situ calibration systems, etc. It is designed according to SL140 and IEC60193 standards, mainly used to test the excellent hydraulic model of Kaiquan. The test bench adopts torque dynamometer, and the measurement and control system is all powered by DC, which eliminates the interference of AC to the measurement and control signal, it can complete energy performance test, cavitation performance test, escape performance test, four-quadrant pump performance test, pressure fluctuation test, force characteristics test, etc. At the same time, four in-situ calibration systems of capacity, pressure, torque and rotational speed have been set up. The overall uncertainty of efficiency is better than 0.25%.

Cold and hot shock and performance test bench

The test bench was independently developed by Kaiquan and completed in 2010. The test bench is equipped with 10000V/6000kVA voltage regulator, and the accuracy of the test bench is up to grade 1 of GB/T3216: ISO9906 Hydraulic Performance Acceptance Test for Rotary Power Pump Level 1, Level 2, and Level 3, can be used for all kinds of nuclear pumps and special fields of the pump's cold, hot hydraulic performance, cold, hot shock, impurities, cold, hot durability, start-up, idle and so on. It can realize the fast thermal shock of 4 to 250°C within 5 seconds, and can run continuously after thermal shock. The test bench passed the appraisal in August 2010. The test bench's function, automation degree and key technical index reached the international advanced level, and was recognized as the scientific and technological achievement of Shanghai.



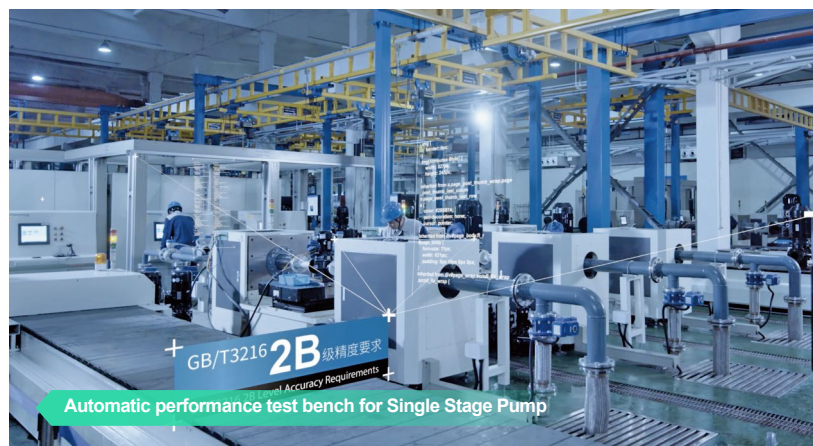
multi-function pump



Cold and hot shock and performance test bench



Double-suction pump test center



Automatic performance test bench for Single Stage Pump



No negative pressure test bench for water supply equipment

Double-suction pump test center

The test bench is designed by Shenyang Institute of Computing Technology of Chinese Academy of Sciences. The double-suction pump test bench has a high-voltage and low-voltage intelligent electric parameters test system, including intelligent hydraulic data acquisition. The existing DN300 and DN500*2 test piping systems include 4 test piping systems, including 150-500 caliber double-suction pump, diesel pump and multi-stage pump. Test system power range: 355kW at low pressure, the maximum testing capacity of high voltage is 2000kW. The voltage levels of the testing system are 380V, 6000V and 10000V. The hydraulic system of the test bench adopts electromagnetic flowmeter, the pressure adopts electronic intelligent pressure transmitter, and the electric parameters are collected digitally, the soft starting mode is adopted for the electric pump starting mode.

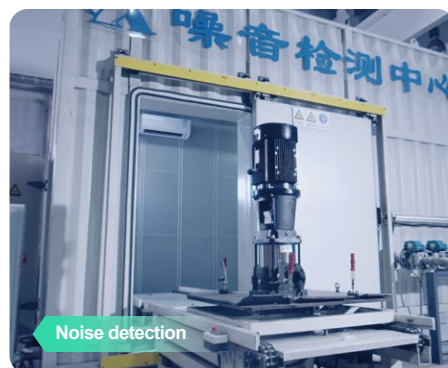
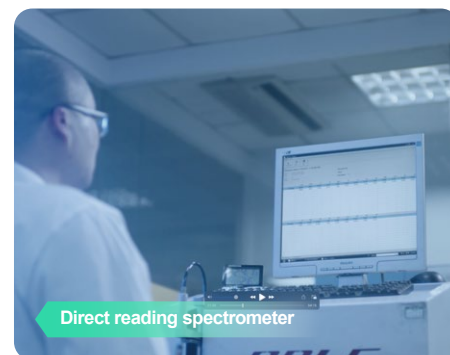
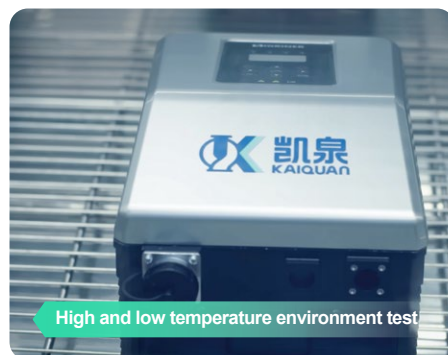
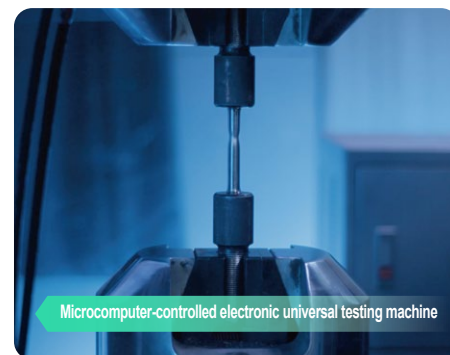
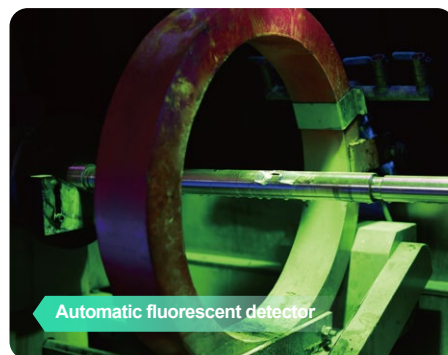
Automatic performance test bench for single-stage pump

Kaiquan self-developed and designed automatic test center, in line with GB3216-2B test level, can achieve 100% performance test of factory products, through PDA complete automatic scan code data reading, automatic installation, automatic test data acquisition, the test result is judged by itself, the test is efficient and fast, the test result is accurate and stable, and the product test information can be traced.

No negative pressure test bench for water supply equipment

By using automatic test equipment, the tester can edit the test steps according to the actual test specifications on the display interface of the test bench, and then realize the manual, automatic, fixed-point and other test methods. At the same time, the test bench can display the test data in real time, collect and store the data, so as to better monitor and record the test data and results.

TESTING PLATFORM



System introduction

In order to improve the systematic and standardized management system, in July 2010, Kaiquan integrated quality, environment, occupational health and safety management systems into a "Three-in-one" integrated management system.

Management system policy: careful manufacturing, dedicated service, care for the environment, energy saving, safety first, care for health, compliance with laws and regulations, continuous improvement.

Certificate of Quality Assurance System

In 1999, awarded the BV Three System Certificate;

In 2012, awarded the Civil Nuclear Safety Equipment Design and Manufacturing License (System) ;

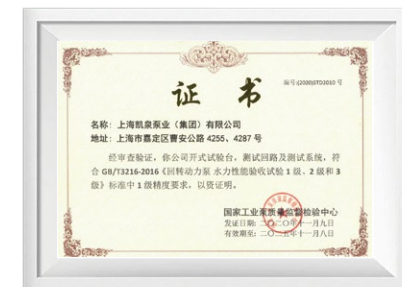
In 2014, awarded the Test Bench Level 1 Precision Certificate (Laboratory) ;

In 2017, awarded the 3A Measurement Management System Certificate (Measurement) ;

In 2018, awarded the 12-star certificate of Continuous and Effective Service Capacity Certification (Service)

In 2020, awarded the CNAS Laboratory Accreditation Certificate (Laboratory) ;

In 2023, awarded the Confirmation Certificate (Laboratory) of Hydraulic Model Test Bench for High-precision Multi-functional Pump.



SERVICE INTRODUCTION

1



Service purpose
Fully satisfied by customers

2



Service concept
No distance of service

3



Spirit of service
The customer's loss is our responsibility

4



Service goal
Let each project all become the
model project of Kaiquan products

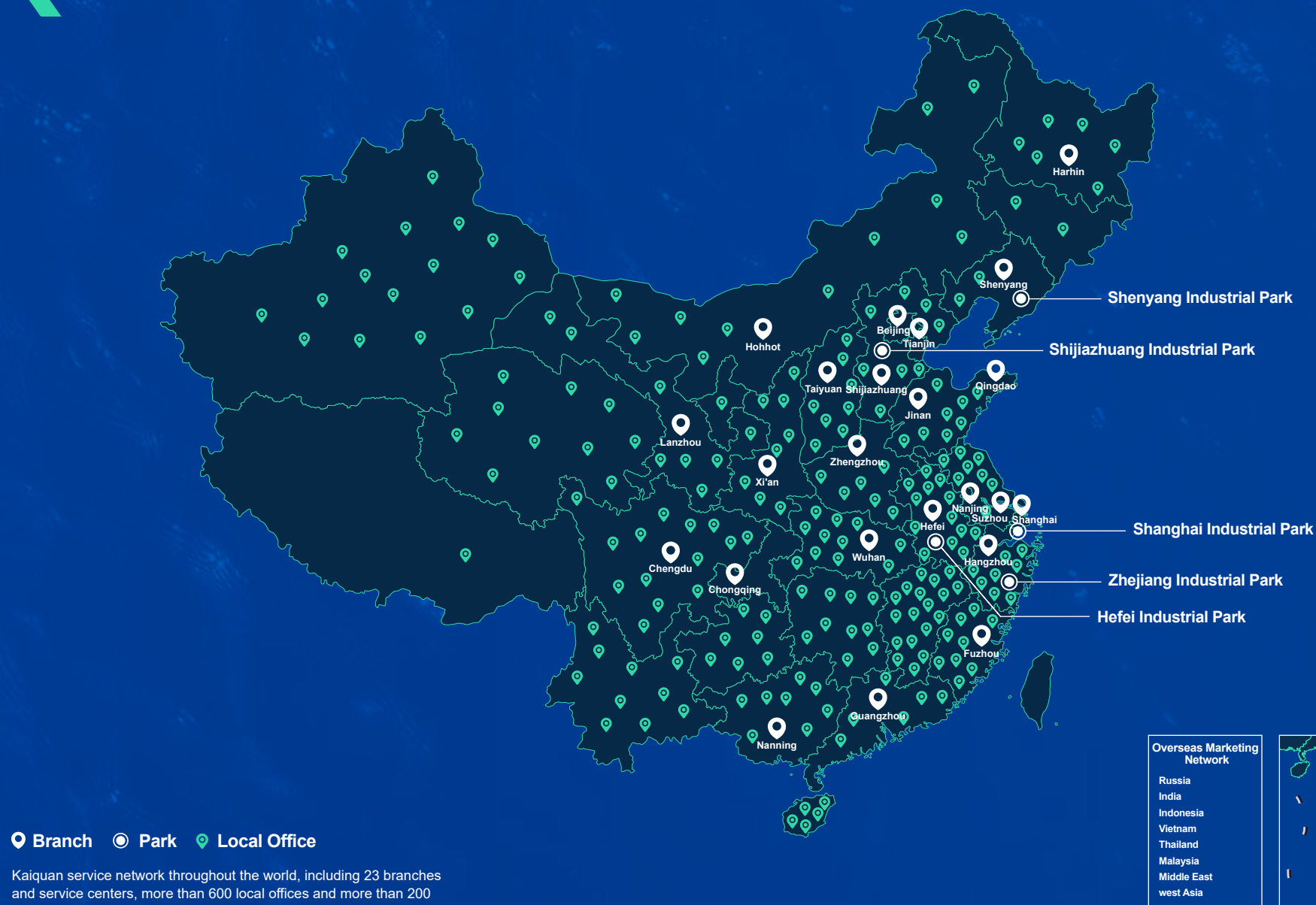
5



Service response
4 hours

SERVICE NETWORK

Empower Water Empower Future



AFTER-SALES SERVICE

SERVICE Customer service platform



Call 400-002-6600 for Kaiquan 400 customer service center that accepts customer telephone complaints, telephone technical advice, accessories after-sales, etc.

Kaiquan WeChat service number platform: Kaiquan news, energy-saving technology diagnosis, after-sales service, online customer service, Fault repair report, etc.



CLIENTELE Product site service

50,000 customers/nearly 3 years



1. Guide installation
2. Product commissioning
3. Product inspection
4. Product maintenance



Energy-saving achievements of Kaiquan high-efficiency pumps

Water system modification

4764 sets

Saving **2,686,210,000** degrees of electricity

The cumulative energy saving is 2.686 billion kwh

Saving **2,192,000** tons

Reducing 2,192,000 tons of carbon dioxide

Saving **805,000** tons

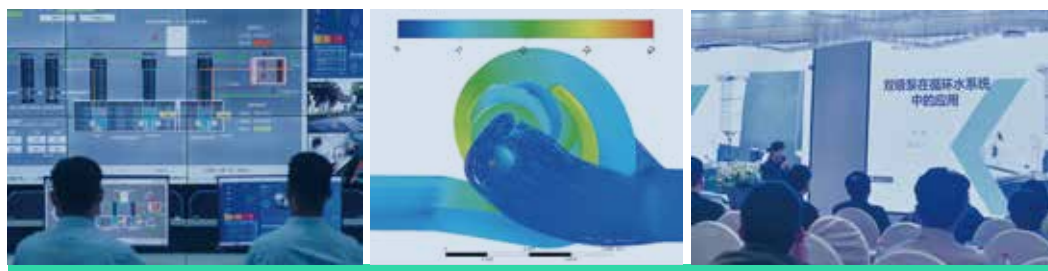
Saving 805,000 tons of standard coal annually

ENERGY SAVING

Energy-saving technical services



Over the past 4 years, Kaiquan has completed more than 4,764 sets of energy-saving technology upgrading projects for nearly 1,200 customers, providing free energy-saving technology diagnosis, free product inspection, and free operation and maintenance technology training, free pump application system solution.



APPRECIATION

Customer value-added services



1. Free energy-saving technology diagnostics
2. Free product inspection and operation training
3. Free pump application system solutions



MINE (COAL MINE) APPLICATION



KQL single-stage pump



Full flow double-suction fire pump without overload



KQSN high-efficiency double-suction centrifugal pump



KQWH weak corrosion chemical pump



One electricity and one diesel oil fire unit



KQSU double-suction pump



KZE petrochemical process pump



DG medium and low pressure boiler pump



XBC diesel engine fire pump



High-pressure boiler feed water pump of 300,000 kilowatt power plant



Complete set equipment of 2BWD water ring vacuum pump



KCZ chemical process pump



D-type mine multistage pump



Y(B)Q mine explosion-proof submersible pump



HQHG seawater desalination high-pressure pump



KZJ slurry pump



Desulphurization pump

ARCHITECTURAL APPLICATION



GXS high-efficiency and intelligent module pump unit



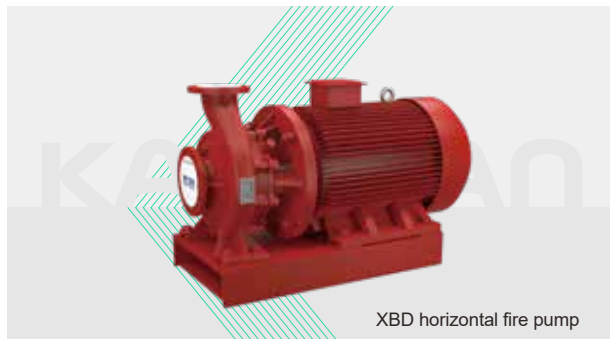
High-efficiency, silent and digital integrated frequency conversion water supply equipment



KQW single-stage pump



KQSU double-suction pump



XBD horizontal fire pump



SGW high-efficiency centrifugal pump



KQSN high-efficiency double-suction centrifugal pump



KQDP/DQ light vertical multi-stage centrifugal pump



Small submersible sewage pump



The sixth generation of digital integrated full-frequency water supply equipment



Special water pump for cooling tower



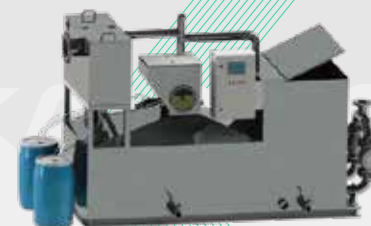
Electronic control cabinet



Directly connected water supply equipment



KQF stack pressure water supply equipment



WQ (L)GT oil isolation lifting equipment



Sewage lifting device



lot fire water supply equipment



Integrated intelligent pump house



ZQ submersible axial flow pump



ZLHL large axial mixed flow pump



Oblique flow pump



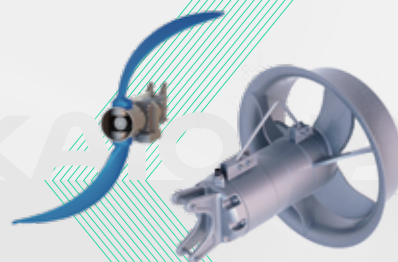
GQ series submersible tubular pumps



WQB explosion-proof submersible sewage pump



KQSN large double-suction pump



KQWT-A decentralized sewage treatment equipment



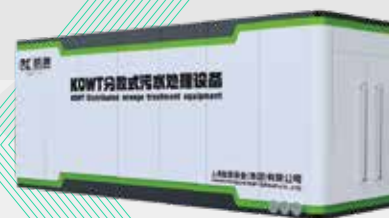
KQWT-B distributed sewage treatment equipment



WQ series submersible sewage pumps



KQWT-A decentralized sewage treatment equipment



KQWT-B distributed sewage treatment equipment



Integrated prefabricated pump station



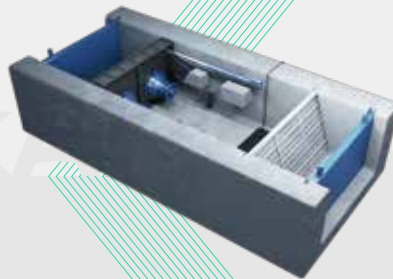
Small sewage pump



Integrated rain and sewage intercepting well



Sewage lifting device



Integrated pump gate



WL dry sewage pump

MAJOR PRODUCT



Nuclear secondary residual heat removal pump for reactor type



Conventional island primary feed water front pump



Conventional island primary feed pump unit



CAP1000/CAP1400 CVS water replenishment pump



Nuclear two-stage medium pressure injection pump for reactor type



CAP1000/CAP1400 nuclear three-stage residual heat removal pump



Nuclear three-stage cooling pump for reactor type



Nuclear three-stage auxiliary pump for reactor type



KSY oil pipeline pump



High temperature molten salt pump



LNG seawater lifting pump



Oil reserve submersible pump

CASES PROJECT



Chashima Nuclear Power Station in Pakistan, C3, C4 units



Hinkley Point Nuclear Power Station, UK



Fuqing Nuclear Power Station



China Datang Corporation



Beihai Power Plant



Fangchenggang Nuclear Power Station



Tianwan Nuclear Power Station



Karachi Nuclear Power Station, Pakistan



State Grid



Taishan Nuclear Power Station



Shandong Weiqiao Group



China Huadian Engineering Co., Ltd.



Tongzhou Water Plant Pump Station, Beijing



Mingshan Pump Station, Yiyang, Hunan



Zhengzhou Zhongyuan West Road Pump Station of The South-North Water Transfer Project



Anyang Western Water Transfer Project of South-North Water Transfer Project



South-North Water Transfer Project



Wuhu Longwo Lake Pump Station



Beijing Xingshikou Pump Station



Tianjin Beitang Pump Station



Tianjin Xi River Pump Station



Beijing Yuquan Mountain Pump Station of the East-West Water Transfer Project



Tianjin Jinzhong River Pump Station



Caozhuang Pump Station of the South-North Water Transfer Project

< CASES PROJECT



Beijing Daxing International Airport



Suzhou CBD of Jinnanhu Lake



Hefei Shangri-La Hotel



Shanghai Maglev



Beijing International Trade Phase III



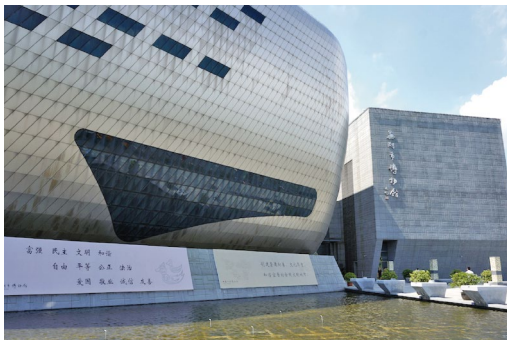
Jiuquan Satellite Launch Center



Changsha Art Center



Sheraton Hotel



Wuhu Museum



Shanghai Pudong International Airport



Fire-fighting and air-conditioning water supply equipment for stations along the high-speed railway



Rail traffic



Limited space, showing only part of the model projects

Industrial and mining applications

Sinopec	MP91 vacuum pump of boron recovery system of Sanmen Nuclear Power Plant Unit 2	MP91 vacuum pump of boron recovery system of Haiyang Nuclear Power Station Unit 2	Liaoning Aoke Chemicals Co., Ltd.	Wuhan Urban Environmental Engineering Technology Co., Ltd.	The No.2 Water Conservancy project in Henan Province	Shenzhen Bao'an Daqianli Residence
Wuhan Steel (Corporation) Co., Ltd.	Hami Runda Glencore Power Generation Co., Ltd.	Anyang Steel Co., Ltd	Anhui Dingyuan Salt Chemicals	Hechi Wangneng Environmental Protection Energy Co., Ltd.	Zhangjiagang Chang Yun Mechanical & Electrical Supplies Co., Ltd.	Co-management and co-construction project of Heze Water Supply Co., Ltd.
Ansteel New Steel Co., Ltd.	Pori Shearer Power Plant	Pucheng (Zaozhuang) Cement Co., LTD	Shanghai Dongshuo Environmental Technology Co., Ltd.	Suzhou Ketai Environmental Technology Co., Ltd.	Hunan No.3 Engineering Co., Ltd.	Project of Fuzhou City Minqing Jinjiang Haiyue intelligent safety standard pump house
SD Steel . Rizhao Co., Ltd.	Xinjiang Tianlong Mining Co., Ltd.	Sijing Desalination Plant of Zaozhuang Cement Co., Ltd.	Tangshan Zhonghao Chemicals Co., Ltd.	Jiangsu Hongqi Printing & Dyeing Machinery Co., Ltd.	Fujian Shuidi Technology Co., Ltd.	Anshun Water Supply Corporation
Guizhou Xingyi Power Development Co., Ltd.	Xinyang Gas Power Plant	Shijiazhuang Xiling Heating Co., Ltd.	PT jebesen and jessenTechnology Ind	Huzhou Green Technology Co., Ltd.	Garden Road water supply pipeline project of Shishi City	Jiangxi Lushan Runquan Water Supply Co., Ltd.
100MW photothermal power generation project of Qiketai Town, Shanshan County, Xinjiang	Anda Xingda Chemical	EGAT	Xinjiang Henglian Wucaiwan Power Plant	Zhidan Jieneng high-tech petroleum technology services	Pressurization project of Weining County water supply consolidation and upgrading project	 Municipal water
The100MW solar thermal electric generator cold salt pump project of Dunhuang Shouhang	Zhejiang Zhihai Chemical Equipment Co., Ltd.	Haicheng Huifeng Biomass Power Generation Co., Ltd.	Xiajiang County Dongxin Industrial Development Co., Ltd.	Hebei Luhong Environmental Protection Technology Co., Ltd.	Zhumadian Heliwang Regulation & Storage Pump Station	
First-stage double-suction multi-stage pump in seawater desalination project	Guangxi Yulin Lieran Chemicals Co., Ltd.	Dongfang Electric East Steam Turbine Co., Ltd.	Xinjiang Tianfu Thermal Power Co., Ltd.	Shandong Shouguang Jian Yuan Chun Chemicals Co., Ltd.	Project of Yancheng City Funing Bo Yue Fu	
Jiangsu Huadian	Shandong Shouguang Jian Yuan Chun Chemicals Co., Ltd.	Shanghai Environmental Engineering Design and Research Institute Co., Ltd.	Oil transporting pump of Sino-Kazakhstan Oil Pipeline	Jilin Huatian Environmental Protection Group Co., Ltd.	Project of co-management and co-construction of Liaocheng Shuixing Municipal Water Company	Jiaxi two-stage pump station project of the Yellow River Diversion project
China Metallurgical Southern Engineering Technology Co., Ltd.	Beijing Trimer Green Energy Technology Co., Ltd.	Aofu Energy Co., Ltd.	Jiangsu Lianyungang Soda Plant	Shanxi Anlun Chemicals Co., Ltd.	Project of Sanming Kaiyuan Baodi intelligent safety standard pump station	Rudila three-stage pump station pump of Yunnan water conservancy and hydropower
China Construction Installation Group Co., Ltd.	Hebei Meitete Chemicals Co., Ltd.	Zibo Qixiang Tenda Chemical Co.,Ltd.	Western Thermoelectric	Suez Environmental Technology (Qinzhou) Co., Ltd.	Jiangsu Zhongsheng High-tech Industry Co., Ltd.	Liao River main stream flood control upgrading project in Liaoning Province
Shanghai Meishan Steel Co., Ltd.	Henan Tianfu Shiji New Material Technology Co., Ltd.	Shouhang Hi-tech Energy Technology Co., Ltd.	Cayman Aluminum (Sanmenxia) Co., Ltd.	Knox (Shanghai) Trading Co., Ltd.	Xiangyang Zhonghuan Water Affairs Co., Ltd.	Yiyang Mingshan Power Station - 2800ZLQ25-6.6
Dongguan Yunxun Container Transportation Co., Ltd.	Wudi Xinyue Chemicals Co., Ltd.	Chinalco International Engineering Co., Ltd.	Hebei Luda Energy-saving Technology	Green Solid Waste Disposal (Huangshi) Co., Ltd.	Anhui Runpeng Construction Engineering Co., Ltd.	No.2 and No.3 water plants of Shenyang Water Affairs Group Co., Ltd.
Dongguan Yixin Ocean Shipping Co., Ltd.	Hanle Fluid Technology (Shanghai) Co., Ltd.	Shanghai Kaisheng Energy-saving Engineering Technology Co., Ltd.	Jinan Steel Group Corp.	 Architectural applications	Hebi Haiyang Municipal Engineering Co., Ltd.	Anhui Huaihe River Diversion Irrigation Project (Dabie Mountain)
Shagang Group Jiangsu Huaigang Special Steel Co., Ltd.	Coal-fired power plant in Riau Province, Indonesia	Sichuan Zhongxin Huacheng Chemical Technology Co., Ltd.	Echeng Steel of Wuhan Steel Group		Water supply for Xiamen Yiju Hotel	Baigou Pump Station, Linquan County, Fuyang, Anhui
Magang Steel Co., Ltd.	Indonesia Beijia Electrolytic aluminium project	Xu Chang Wang Neng Environmental Energy Co., Ltd.	Branch of Sinopec Zhenhai Refining Chemicals		Expo China Pavilion at Expo 2010-International Pavilion	Shantou Nanfeng Pump Station -2200ZLB16-5.2
Shaanxi Shenmu Chemical Industry Co., Ltd.	Sand pump of Dongguan Kaihang Shipping Co., Ltd.	Shandong Huizhong Environmental Protection Engineering Co., Ltd.	Shandong Weifang Coking Group	Shenzhen National Exhibition Center	Project of Lianyungang Xue Yuan Fu	Longwo Lake Pump Station - 2200ZLB17.5-4.7
Zhangdian General Iron and Steel Plant	Fujian Longyan Power Plant	Panzhuhua Taizhou Wangneng Environment Protection	Qian'an City Jiujiang Coal Storage & Transportation Co., Ltd.	Phase III expansion project of Lanzhou Zhongchuan International Airport - GTC	Agriculture & drinking water project, Gangcheng District, Jinan City	Dateng Canyon Qixing River Pump Station-1600ZLB8-2.35
Jilin Petrochemical Co., Ltd.	Dongguan Hung Fu Transportation Co., Ltd.	Zibo hazardous waste disposal of Everbright Environmental Protection	Huizhou Lieran Chemical Co., Ltd.	Beijing International Culture Silicon Valley	Cheungqing Centre Pump Station - regional pressurization pump house	Yangqi Pump Station-1600ZLQ(S)8.3-4.5
Jiangxi Saiwei LDK Photovoltaic Silicon Technology Co., Ltd.	Dongguan Yunxun Container Transportation Co., Ltd.	Wuxi Masheng Environmental Energy Technology Co., Ltd.	The EPC project of the Kendari III coal-fired power plant in Indonesia	Zhongyuan Tower (Zhongyuan Tower)	Co-management and co-construction project of Jinan City Water Affairs Group	Indonesia -- Sulawesi Circulating Pump Station -1400HD-24SZ
Xinjiang Daqo New Energy Co.,Ltd.	Shanxi Shenmu Tengyuan Coal Chemical Industry Co., Ltd.	Flue gas desulfurization project of Nanjian Power Plant	East Sugar Group	Zhengzhou Twin Towers	Hebei Huapeng Construction & Installation Engineering Co., Ltd.	Vietnam Wan'an Pump Station

CASES PROJECT

Empower Water Empower Future

Phase II project of Dongguan Changping West Sewage Treatment Plant	Project of Zhengzhou Zhongyuan West Road Pump Station of the the South-to-north Water Diversion Project	Zhangzhou Units 1&2 — equipment cooling water pump
Xintankou Pump Station-2800ZLQ22-7.5	Project of Lianyungang Ganyuta Mountain Pump Station	Changjiang Units 3&4 — residual heat removal pump
Tonghuwei Pump Station (horizontal)-1800ZWB12.5-2.5	Zhongshan Water Supply & Intake Pump Station, Guangzhou	Changjiang Units 3&4 — equipment cooling water pump
Yongxinghe Pump Station-2000ZLQ17.5-4.7	Zuncun Village First-stage Pump Station-1600ZLQ7-8.9	Tianwan Units 7&8— high & low pressure injection pump / equipment cooling water pump / spray pump
Jihongtan Pump Station -1600HD(Q)-10	Energy-saving renovation of Jiading District Water Plant	Tianwan Units 7&8—chemical reagent pump / diesel generator cooling water pump
Zhoushan Chashan Pump Station-1600ZLB6.67-2.2	Energy-saving renovation of Pingdingshan Water Plant	Xudabo Units 3&4—chemical reagent pump / diesel generator cooling water pump
Dongying water supply project	Energy-saving renovation of Anting Water Plant	Xudabo Units 3&4— high & low pressure safety injection pump / equipment cooling water pump/spray pump
Yueyang's No.1 Water Supply Plant	Zhongshan Water Supply & Intake Pump Station	Ningde Units 5&6— LOT134Aa containment heat export pump
Hubei Jinhuan Joint-stock Water Plant	Yinchuan Helan Mountain Water Plant	Fangchenggang Units 3&4— LOT134Bc medium pressure safety pump
Wenzhou City Hangkoutang Water Plant	 Major products	Sanao Units 1&2—134D cooling water pump
Qidong City Water Plant		LOT42E condenser vacuum of Taipingling project Units 1& 2 of CGN Engineering Co., Ltd.
Xindu Dafeng Water Plant	Pakistan C3C4—high pressure injection pump	Lianjiang Units 1&2 — MPO8 residual heat removal pump
Ershibu River Sewage Interception Pump Station	Pakistan K2K3—residual heat removal pump	Ningde Units 5&6 — equipment cooling water pump
Shishou Zhoujiafu Water Plant	Pakistan K3 — medium pressure safety injection pump	Zhangzhou Units 3&4 — medium pressure injection pump
Yinchuan Helan Mountain Water Plant	Fuqing Units 5&6 — equipment cooling water pump	Zhangzhou Unit 3&4 — important plant service pump
Zhengzhou Water Plant	National nuclear demonstration project — MPO8 normal residual heat removal pump	Zhangzhou Units 34 — residual heat removal pump
Lianyungang Linhong West Pump Station—3100ZLB30-2.93	TMSR, Chinese Academy of Sciences—fuel salt circulating pump	Fangchenggang Units 5&6—equipment cooling water pump
Xiajiang County Tongjiang Pump Station—2400HLQ17.5-7.2	Zhangzhou Units 3&4—equipment cooling water pump	Shidaowan Unit SK12—equipment cooling water pump
West Lake Pump Station (oblique)—1700zxb11.7-4.16	Fangchenggang Units 3&4—medium pressure safety injection pump	Lufeng Units 5&6—134D equipment cooling water pump
Jinzhong River Pump Station—1600zlb9-4	Lufeng 12 project — MPO8 residual heat removal pump	Lufeng Units 5&6—LOT134C important plant service pump
Lift irrigation project of Ningxia Water Conservancy Department - Guhai Pump Station	Nuclear power conventional island cycle primary pump — 3000HD-12.5SZ	Sanao Unit 12 — LOT134C important plant service pump

Limited space, showing only part of the model projects



KAIQUAN PUMP (GROUP) CO., LTD.

Telephone: +8619031016393

Group website: <https://www.kaiqpump.com/>

WhatsApp/WeChat: +86190 3101 6393