



POWERING INFINITE ENERGY



上海电气电站集团
Shanghai Electric Power Generation Group

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POWERING PROGRESS SUSTAINING FUTURES

From conventional to renewable power, from integrated services to industrial decarbonization, Shanghai Electric power progress by decarbonizing energy at every stage – transforming how the world generates, stores, and utilizes power for a green, low-carbon, and sustainable tomorrow.



ABOUT US

High-Efficient
Clean Energy

Emerging
Energy

Industrial
Equipment

Advanced
Research

Energy
Engineering

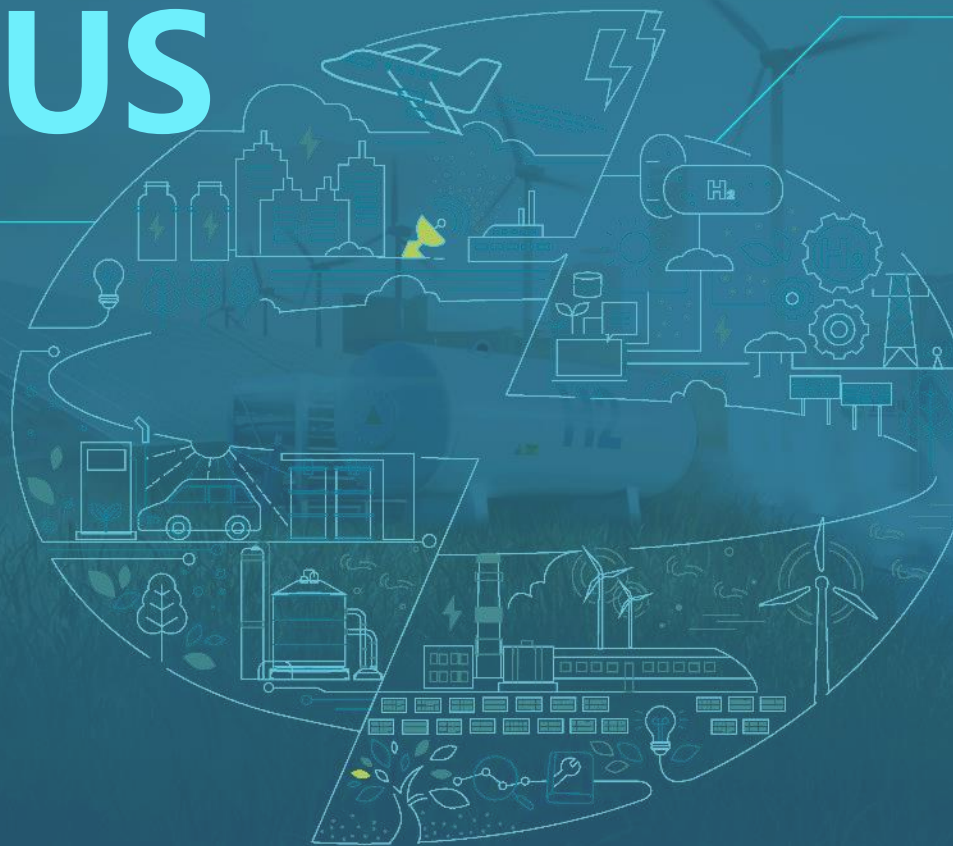
Plant Lifecycle
Services

Smart Energy
Solutions



ABOUT US

**SHANGHAI
ELECTRIC POWER
GENERATION
GROUP——
GLOBAL LEADER IN
SMART ENERGY
ECOSYSTEMS.**



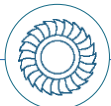
As the core business segment of Shanghai Electric, a global leader in high-end equipment manufacturing, Shanghai Electric Power Generation Group provides clean, efficient, and reliable smart energy solutions worldwide.

For over a century, we have been engineering the future of energy. Our team of thousands of experts, along with partners around the world, tackles complex challenges across the entire energy ecosystem.

Operating in more than 20 countries, we cover the full spectrum of energy—from conventional to renewable power, from EPC and life-cycle services to smart energy solutions. In industry, we deliver integrated solutions including motors, turbines, drives, and load equipment—accelerating the transition to low-carbon operations.

We are committed to driving the global energy transition, enabling decarbonization and sustainable development. Technology is transforming energy. We are here to lead the change.

OUR BUSINESSES



ENERGY EQUIPMENT

HIGH-EFFICIENT CLEAN ENERGY

COAL-FIRED POWER

- Cumulative manufactured **574** million kW
- Annual output: **50 GW**

NUCLEAR POWER

- 20+** turbine generator units
- 400+** associated motors
- 150+** conventional island auxiliary systems

GAS POWER

- Total installed capacity of the units **17 GW**
- Highest combined cycle efficiency **63%**
- Maximum hydrogen blending ratio **30%**
- Cumulatively provided self-performed LTSA maintenance services exceeding **1.03** million hours

CONCENTRATED SOLAR POWER

- Heliostat
- Receiver
- Steam Generator
- Heat Exchanger
- Molten-Salt Storage Tank
- Solar Thermal Steam Turbo-Generator (Package)
- Air-Cooled Island

CONDENSER

EMERGING ENERGY

HYDROGEN SOLUTIONS

- Alkaline Electrolyzer
- PEM Electrolyzer
- Diaphragm Compressor
- Hydrogen Storage Device

ENERGY STORAGE

- Compressed Air Energy Storage
- Molten Salt Thermal Energy Storage
- Flywheel Energy Storage



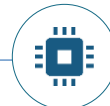
INDUSTRIAL EQUIPMENT

INDUSTRIAL DRIVES

- Industrial Turbines
- Electric Motors
- Industrial Boilers
- Power Electronics & Control Systems
- Pulverizing Equipment
- Fans

CHEMICAL EQUIPMENT

- Gasification Island Core Equipment
- Waste Heat Utilization System Equipment
- Metallurgical Engineering System Equipment
- High-End Chemical Equipment for Multiple Industries



ADVANCED RESEARCH

- Green Fuel
- Carbon Capture& Storage
- Aircraft Electric Propulsion
- Offshore Floating Power Generation



INTEGRATED SERVICES

ENERGY ENGINEERING

- Coal-Fired Power
- FGD & DeNOx
- Gas Turbine
- Solar Energy
- Wind Power
- Air-Cooled
- Integrated Energy
- Energy Storage
- Chemical Engineering
- Coking Engineering
- Desalination

PLANT LIFECYCLE SERVICES

- Spare Parts Services
- Equipment Upgrade & Modernization
- Integrated Retrofit Solutions
- Overhaul Service
- O&M Services
- Long-Term Maintenance Agreement
- Technical Support
- Other services

SMART ENERGY SOLUTIONS

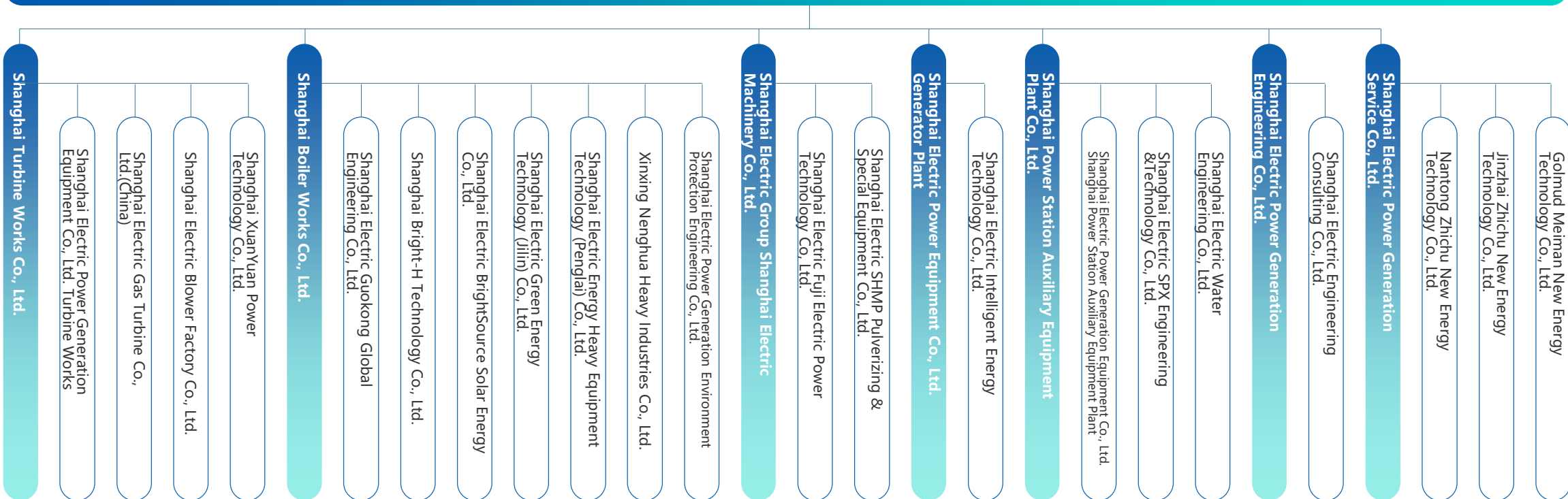
- Ellumix*** Smart Energy Platform

*Projects and businesses are conducted in 26 countries and regions



COMPANY STRUCTURE

SHANGHAI ELECTRIC POWER GENERATION GROUP



BUSINESS PERFORMANCE

Shanghai Electric Power Generation Group is staunch in intellectual upgrading, technological empowerment, and the transformation and development of efficient and clean energy, new energy and industrial drive. By improving systematic solution capability and core competitiveness of the equipment, it accelerates the pace of becoming an international first-class equipment enterprise, and promotes the progress of mankind and the sustainable development of society.



Number Of Employees

10,500



Nearly

\$278MN

R&D Investment In 2024

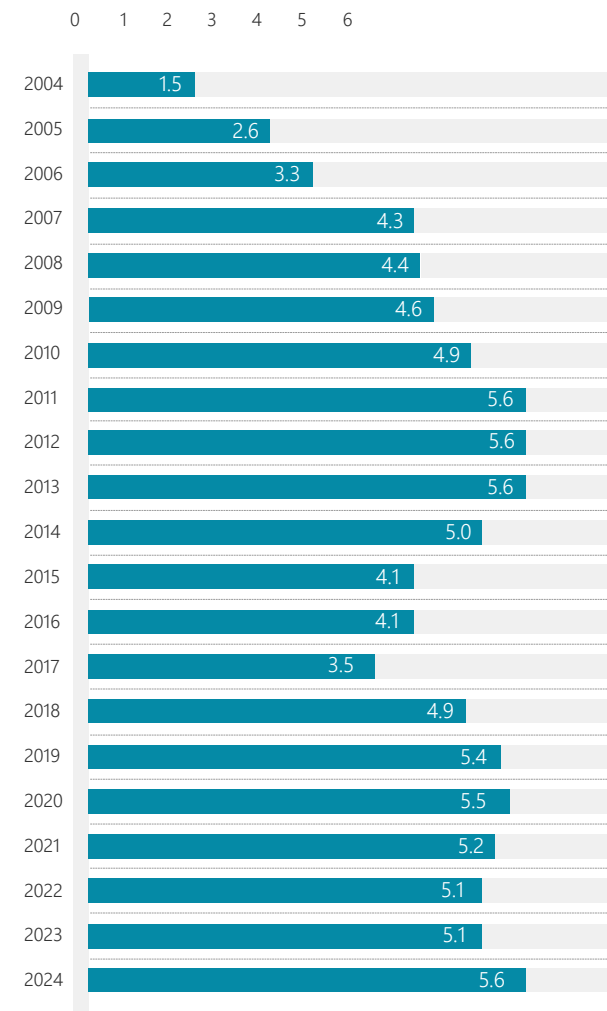


Brand Value

\$322BN

REVENUE CHART 2004-2024

■ Revenue (In Billion US Dollars)



ABOUT US

High-Efficient
Clean Energy

Emerging
Energy

Industrial
Equipment

Advanced
Research

Energy
Engineering

Plant Lifecycle
Services

Smart Energy
Solutions



R&D investment over the last 10 years

\$1.8BN

Over **3,000** R&D employees

46 National Science and Technology
Progress Award & Shanghai Science
and Technology Progress Awards)

3,300+ granted patents

13 joint laboratories

TECHNOLOGY AND INNOVATION

THE FUTURE IS NOW

As a driver of energy value chain transformation, Shanghai Electric Power Generation Group leverages an open, collaborative innovation ecosystem to deliver cutting-edge system solutions globally.

We foster open innovation, continuously advancing core technologies and critical equipment to upgrade energy systems. We drive intelligent transformation of traditional clean energy while pioneering strategic emerging industries like new energy storage, hydrogen, and solar power.

Partnering with partners through collaborative innovation, we jointly tackle energy decarbonization challenges to accelerate a secure, efficient, and sustainable zero-carbon future.

ENERGY EQUIPMENT



NEXT-GENERATION POWER SYSTEM SOLUTIONS

Where Power Meets
Intelligence



HIGH-EFFICIENT CLEAN ENERGY

- Coal-fired Power
- Gas Power
- Nuclear Power



EMERGING ENERGY

- Solar Power
- Hydrogen Solutions
- Energy Storage
- Condenser

COAL-FIRED POWER

SECURING OUR ENERGY FUTURE

As the world's most comprehensive supplier of coal-fired power equipment, Shanghai Electric leads in high-efficiency, low-emission solutions with a complete product range from 350MW to 1350MW. Utilizing world-class technology, we have manufactured 574 GW of equipment cumulatively, with an annual output of 50 GW (as of 2024), consistently setting global benchmarks for the lowest coal consumption. Shanghai Electric is actively developing next-generation coal power technologies to support the evolution of modern power systems and drive the industry's transition toward sustainable energy solutions.

NEXT-GENERATION POWER SYSTEM SOLUTIONS



Clean



Reliable



Flexible



Intelligent



HUANENG QINMEI RUIJIN POWER PLANT PHASE II

The world's first

1,000MW

dual-turbine heat regenerative and double reheat high-efficiency ultra-supercritical coal-fired power unit

Comprehensive coal consumption for power generation

249.7 g/kWh

GUODIAN TAIZHOU POWER PLANT PHASE II

The world's first

1,000MW

double reheating power unit

Rated by the China Electricity Council as having 5A units of energy efficiency yearly, since it was put into operation in 2015

Ranked No. 1 nationally in 2022 for its 1,000MW capacity, with a 100% comprehensive evaluation coefficient

[Learn More >](#)

OUR LEGACY OF COAL- FIRED POWER

1953

- Introduced and imitated high-pressure 6MW units from Eastern Europe in the 1950s (Tianjiaan)



1987

- Jointly introduced 300MW subcritical units (deployed at Shiheng Power Plant - China's first imported 300MW units) from CE and Westinghouse Electric Corporation of the United States



2013

- Tianji**
27 MPa/600°C/620°C
China's first 620°C Ultra-Supercritical Single-Reheat unit

2020

- Yangxi**
World's first Single-shaft 1,240MW Ultra-Supercritical Single-Reheat unit with the largest capacity



2021

- Ruijin**
31 MPa/605°C/622°C/620°C
World's first 1,000MW dual-turbine heat regenerative and double reheat ultra-supercritical unit.
Comprehensive coal consumption for power generation: 249.7 G/kWh



2006

- Yuhuan**
26.25 Mpa/600°C/600°C
China's first 1,000MW Ultra-Supercritical Single-Reheat unit

1975

- In the 1970s, we began to independently design and manufacture 300MW subcritical units (Yaomeng)

2015

- Taizhou**
31 MPa/600°C/610°C/610°C
World's first 1,000MW Ultra-Supercritical Double-Reheat unit



2020

- Dongying**
31MPa/600°C/620°C/620°C
World's first six-cylinder /six-exhaust flows Ultra-Supercritical Double-Reheat unit with ultra-long shaft system and ultra-low back pressure

2023

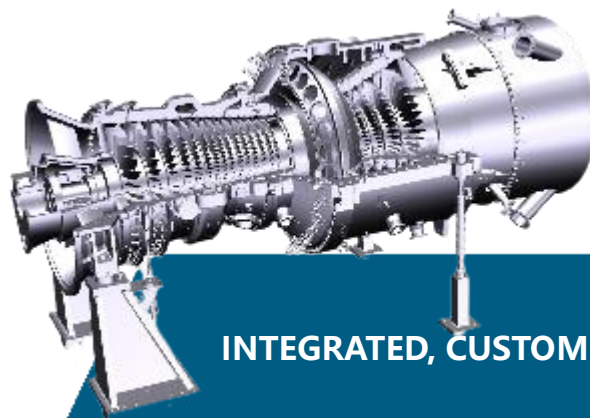
- R&D of next-generation coal-fired power
Adapting to new power system requirements
Safe, low-carbon, flexible



GAS POWER

MAXIMIZING VALUE, THROUGH THE ENTIRE LIFECYCLE

As a manufacturer with fully independent IP, Shanghai Electric controls the complete gas turbine value chain—from R&D to service. We deliver 75MW-1000MW single/combined cycle power solutions. Since 2014, our operational units exceed 17GW total capacity, achieving up to 63% combined cycle efficiency with 1.03 million hours of self-performed LTSA maintenance. Leading indual carbon targets, we completed pioneering hydrogen blending validation on operating large F-class units. Our carbon-reduction technologies cover pipeline fuel hydrogen content and on-site plant blending, supporting up to 30% hydrogen blending ratios.



INTEGRATED, CUSTOMIZED & INTELLIGENT GAS TURBINE SOLUTIONS

Shanghai Electric resolves gas turbine pain points by integrating design expertise and O&M data with AI, 5G, cloud and big data. This enables our gas turbine big data center and 'SIMPLE' lifecycle platform, delivering intelligent remote diagnostics and services.



Highest Combined
Cycle Efficiency

63%

Maximum Hydrogen
Blending Ratio

30%

LTSA maintenance
services

1.03MH



GAS POWER

**DATANG HAIKOU PROJECT**

CHINA'S FIRST LARGE F-CLASS HYDROGEN BLENDING PROJECT

In November 2023, Shanghai Electric achieved China's first large F-class gas turbine hydrogen blending test (> 7% vol.) at Datang Haikou Power Plant. Equipment operated stably with compliant emissions, supporting Hainan Province's safe, green, and efficient low-carbon energy system development and accelerating its Clean Energy Island initiative.

**SHENZHEN ENERGY GANLU PROJECT**

SMALL F-CLASS TECHNOLOGY AND INNOVATION BASE

Shanghai Electric supplied gas/steam turbines, generators, and HRSGs. Proprietary AM combustion chamber insulation extends overhaul cycles. With Shenzhen Energy, we established dual demonstration bases: "Small F-Class Gas Turbine Technology & Innovation Base" and "Small F-Class Gas-Fired Combined Cycle Base", advancing innovation and tech transfer.

**SPIC MINHANG H-CLASS PROJECT**

MAJOR PROJECT IN SHANGHAI

Shanghai Electric's H-class (GT36) units deliver high performance, low emissions, operational flexibility, extended overhaul cycles, and broad fuel adaptability. Successfully completing 168-hour full-load trial operation on September 28, 2023, they significantly enhance Shanghai power grid stability.

**LIAONING BENSTEEL PROJECT**

SHANGHAI ELECTRIC'S FIRST LOW CALORIFIC VALUE E-LEVEL GAS TURBINE PROJECT

This project features Shanghai Electric's first low-calorific E-class gas turbine, fueled by Bensteel's blast furnace/coke oven gas blend. It delivers high efficiency with low emissions, power/water consumption. Signed before China-Italy leaders, the turbine completed 96-hour full-load operation in March 2022 - a breakthrough for China's steel sector co-generation.

NUCLEAR POWER

ACTIVE, SAFE AND ORDERLY DEVELOPMENT OF ADVANCED NUCLEAR POWER TECHNOLOGY

Shanghai Electric has full capabilities in manufacturing major conventional island equipment and nuclear-grade components for nuclear power plants. Its conventional island packages and auxiliary nuclear island systems cover all reactor types from Gen II to Gen IV HTGRs.

The company's advanced low-pressure welded rotor and long blade technologies support steam turbines ranging from 10MW to 2000MW, adaptable to various backpressure conditions — including air cooling — and suitable for diverse sites from north to south, coastal to inland, in both single and multi-backpressure nuclear applications.



YANGJIANG NUCLEAR POWER

Reflecting Shanghai Electric's excellent design and manufacturing capabilities of nuclear power conventional island, and winning the Second Prize of China Nuclear Energy Association's Science and Technology Progress Award



KARACHI UNITS 2 & 3 (PAKISTAN)

First Overseas Hualong One (HPR1000) Nuclear Power Project
Won 3rd Prize of China Machinery Industry Science and Technology Award and 1st Prize of Shanghai Electric Power Innovation Award



QINSHAN PHASE I

China's first self-designed, built, and operated nuclear plant,
Achieving a 20-year life extension approved by national regulators in 2021, Output increased from 310 MW to 350 MW

CONCENTRATED SOLAR POWER

As a world-leading CSP equipment supplier and EPC contractor, Shanghai Electric is exclusive provider of Solar Tower Plant technology with wireless solar fields. We deliver full-spectrum capabilities: core equipment manufacturing, system integration design, and whole lifecycle management including O&M. Our end-to-end solutions cover all main systems – solar field, receiver, thermal storage/exchange, and power generation – serving global CSP applications: power generation, energy storage, cross-seasonal thermal supply, and oil extraction.



100MW CSP TOWER PROJECT IN DUBAI

As the EPC contractor and technology provider for Dubai's 100MW CSP plant (one of the world's largest single CSP projects), Shanghai Electric enables 24/7 continuous power generation. The project supplies clean electricity to 270,000 households in Dubai each year, reducing carbon emissions by 1.4 million tons.

TALLEST IN HEIGHT

World's tallest Tower Solar Plant

263 Meters

OPTIMAL IN OPERATION

Longest continuous operation:

39 Days

LARGEST IN SCALE

World's largest capacity scale
CSP+PV project

950 MW

[Learn More >](#)

GREATEST IN THERMAL STORAGE

World's largest CSP unit thermal storage:

5,907 MWh watts

Diameter

44.3 M

Heat loss: only

0.8 °C/Day

Receiver Capacity

630MWt

Steam generator heat exchange
efficiency:

99.8%

Applied in multiple domestic CSP projects



110MW CSP TOWER PROJECT IN AKSAI

The 110MW Tower Solar Plant project in Aksai, Gansu is one of the first pilot projects for "CSP + PV" in China. Its heat exchange island and the steam turbo-generator were fully designed and supplied by Shanghai Electric.

Annual power generation:

1.7 Billion kWh

CO₂ reduction:

1.47 Million Tons

Annual standard coal saved:

507,000 Tons

Equivalent afforestation: approx.

80,000 Hectares

HYDROGEN SOLUTIONS

Shanghai Electric specializes in hydrogen energy technical services, integrated green hydrogen solutions, and equipment manufacturing/sales for water electrolysis. Market-ready products: 100-3,000 Nm³/h alkaline (ALK) electrolyzers; 5-400 Nm³/h proton exchange membrane (PEM) electrolyzers; and "N-to-1" hydrogen production systems. R&D-phase products include anion exchange membrane (AEM) electrolyzers and solid oxide electrolyzer cells (SOEC).

Annual production capacity of
alkaline electrolyzer

1 GW

Annual production capacity of
PEM electrolyzer

200 MW



BRISTACK®-1000 NM³/H ALKALINE ELECTROLYZER

HIGH CURRENT DENSITY, LOW ENERGY CONSUMPTION

- DC power consumption as low as 3.94 kWh/Nm³ (at 1.6 MPa & 2500 A/m²), improving energy efficiency by 12% compared to the industry standard.
- Maximum operating current density can reach 8000 A/m², over twice as high as conventional electrolyzers.

WIDE LOAD RANGE, FAST RESPONSE

- Operating load range: 25% to 200%. DC power consumption at 25% load is only 3.70 kWh/Nm³.
- Ramp rate of 2.8%/s, enabling rapid and flexible response across a wide power range.



HYDROGEN STORAGE DEVICE

Product series covering pressure levels of :

1.6-20-45-90 Mpa and more.

Configurations include: Horizontal, Vertical, Spherical, Single-layer/Multi-layer Wound, Steel Strip Cross-wound.

DIAPHRAGM COMPRESSOR

Product series covering pressure levels of :

20-45-90 MPa and more.

Custom-engineered solutions tailored to user requirements.

BRISTACK®-300 NM³/H PEM ELECTROLYZER

HIGH CURRENT DENSITY, LOW ENERGY CONSUMPTION

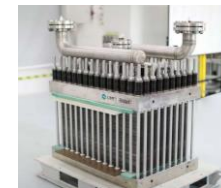
- DC power consumption as low as 3.95 kWh/Nm³ (at 3.0 MPa & 15000 A/m²).
- Industry-leading energy efficiency at high current density.

WIDE LOAD RANGE, FAST RESPONSE

- Operating regulation range: 5% to 167%.
- Response speed: ±10%/s, capable of handling fluctuating renewable energy input.

HIGH CAPACITY, OPTIMIZED MASS TRANSFER

- Hydrogen production rate: 300 Nm³/h under rated conditions.
- Maximum hydrogen production: 500 Nm³/h.
- Advanced gas-liquid mass transfer and thermal management ensure safe and stable operation at ultra-high production rates.



HYDROGEN SOLUTIONS

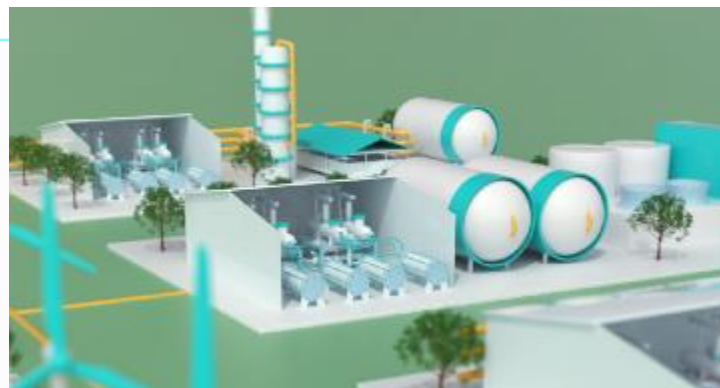


WIND POWER COUPLED WITH BIOMASS GREEN METHANOL
INTEGRATED DEMONSTRATION PROJECT IN TAONAN, JILIN

SUPPORTED BY 8,000 NM³/H ALKALINE AND 200 NM³/H PEM ELECTROLYZERS

It is China's pioneering green power-to-hydrogen on-site consumption project. By using green hydrogen coupled with CO₂-rich syngas to synthesize methanol technology, it reduces biomass consumption per ton of methanol and achieves efficient utilization of biocarbon. The alkaline and PEM deep coupling system simultaneously addresses the efficiency and safety issues surrounding wind power hydrogen production.

[Learn More >](#)



5MW PHOTOVOLTAIC HYDROGEN PRODUCTION AND
REFUELING STATION PROJECT IN FRANCE

SUPPORTED BY 2×500 NM³/H CONTAINER-TYPE ALKALINE ELECTROLYZERS

It provides customers with integrated solutions for distributed photovoltaic hydrogen production and skid-mounted hydrogen stations. The modular design greatly reduces the footprint of the system and shortens installation and commissioning time. Once completed, it can meet the demand of surrounding hydrogen vehicles for hydrogen and support the development of hydrogen transportation in Europe.



SHANGHAI ELECTRIC'S "MANUFACTURING-STORAGE-
UTILIZATION" INTEGRATED DEMONSTRATION PROJECT OF
GREEN HYDROGEN

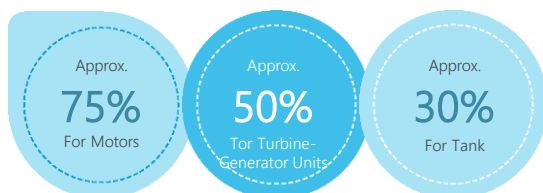
SUPPORTED BY 300 NM³/H PEM ELECTROLYSIS SYSTEM

Completed in April 2023, the equipment has been in stable operation for over 5,000 hours, with all performance and stability indicators better than the design values. The project helps customers with successful implementation of innovative technology models for source-grid-load-storage-hydrogen new energy sources, creating a distributed comprehensive intelligent energy demonstration of "wind-solar-storage-charging-hydrogen" in industrial parks.

COMPRESSED AIR ENERGY STORAGE

Shanghai Electric boasts a mature industrial group and robust equipment manufacturing capabilities. We provide customized, reliable core equipment – including turbine expanders, motors, heat exchangers, generators, and storage tanks – to energy storage users worldwide. Additionally, we deliver turnkey core equipment solutions for compressed air energy storage (CAES) systems.

Shanghai Electric's Market Share In High-Power Class Projects:



CEEC SHANDONG TAI'AN 350MW COMPRESSED AIR ENERGY STORAGE INNOVATION DEMONSTRATION PROJECT

"Four-stage compression + four-stage expansion" system with **8 hours** of energy storage/charging time
 Energy release/Discharge time: **4 hours**;
 Overall conversion efficiency of system: **≥70%**;
 Annual power generation: **460 million kWh**



300MW COMPRESSED AIR ENERGY STORAGE POWER PLANT DEMONSTRATION PROJECT IN JIUQUAN, GANSU

World's first 300MW artificial cavern pressure storage project, with an energy storage/compression duration of **8 hours** and an energy release/generation duration of **6 hours**
 Achieved a world-first breakthrough in overcoming geological constraints for compressed air energy storage
 Maintains **internationally leading** positions in both solution provision and industrial ecosystem development



JIANGSU GUOXIN HUAI'AN 2×300MW COMPRESSED AIR ENERGY STORAGE PROJECT

The implementation of a molten salt thermal storage high-temperature scheme makes this energy storage system the first of its kind in China under this technological route
 Design conversion efficiency: **≥ 71%**;
 Highest industry heat storage temperature: **360°C**
 Annual coal consumption reduction: **250,000 tons**;
 CO₂ reduction: **600,000 tons**

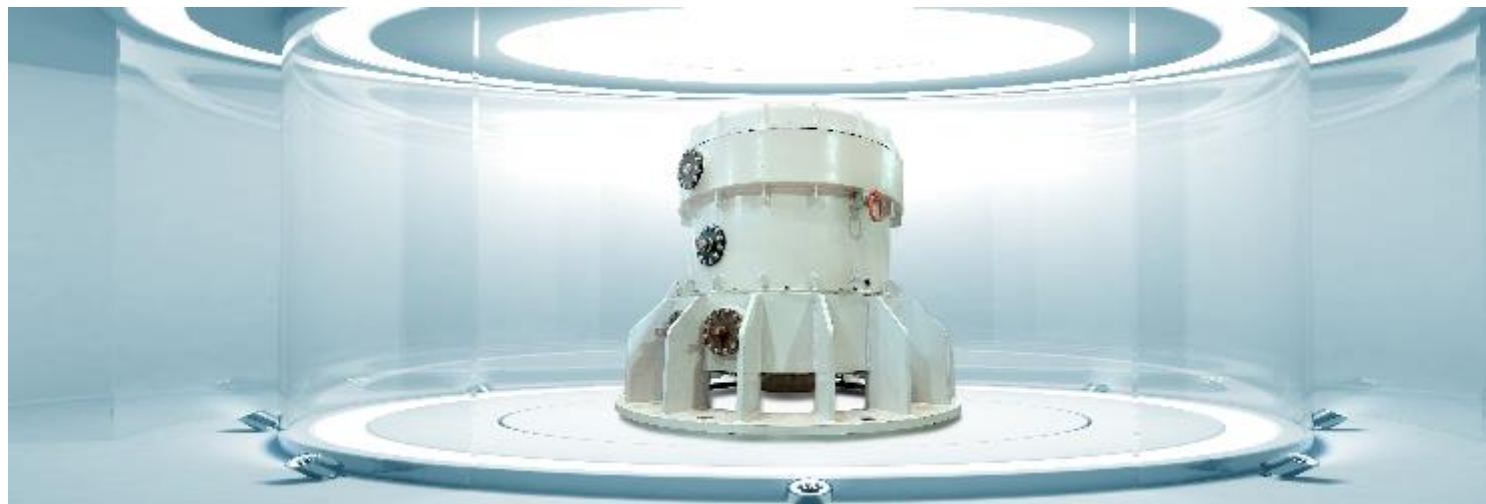
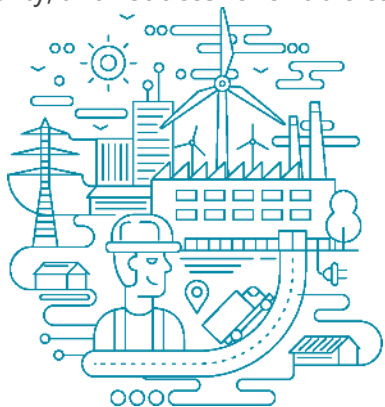


HUANENG JINTAN 2×350MW COMPRESSED AIR ENERGY STORAGE PROJECT

National Demonstration Project
 Total energy storage capacity: **2,800MWh**; Energy storage/compression duration: **8 hours**; Energy release/generation duration: **4 hours**
 Boasts the largest capacity and most spherical tanks in China

FLYWHEEL ENERGY STORAGE

Engineered for grid stability, Shanghai Electric flywheel-based solution delivers critical frequency regulation. Leveraging high power, rapid response, and long lifespan, it meets the demanding needs of thermal plants, wind farms, and PV stations. The system mitigates grid fluctuations, stabilizes frequency, enhances power quality, and reduces renewable curtailment.



INDUCTION MOTOR FLYWHEEL

Minimum Loss

Standby loss: as low as **3kW**,
Self-discharge rate: **2.3%/h**

Maximum Depth Of Discharge

Using the electric excitation method of the flywheel energy storage motor with induction rotor configuration can achieve a discharge depth of up to **90%**.

Simplest And Most Reliable Energy Management System

The motor rotor utilizes radiation cooling at elevated temperature limits, eliminating air or water cooling systems. This boosts flywheel system reliability while slashing maintenance.

* Better Than Market Data

PERMANENT MAGNET MOTOR FLYWHEEL

Standby loss of market equivalent permanent magnet flywheel: **15kW**;
Self-discharge rate: **12%/h**

The discharge depth of permanent magnet flywheel energy storage motors on the market is around **70%**.

Market flywheel systems of comparable capacity typically require complex helium or water cooling, leading to reduced reliability and higher operational costs.

MOLTEN SALT THERMAL ENERGY STORAGE

Shanghai Electric develops molten salt thermal energy storage systems for thermal plant peak shaving, grid-side storage, renewable integration, and low-carbon industrial steam. Leveraging technical expertise, integrated supply chain, QMS, and specialized teams, we deliver custom solutions—including complete systems with steam generators, molten salt tanks, and heat exchangers—meeting industry-leading safety/reliability standards.



MOLTEN SALT-STEAM HEAT EXCHANGER PACKAGE SUPPLY FOR HUAYUAN/HAIMEN POWER PLANT MOLTEN SALT ENERGY STORAGE PROJECT

It has filled the technological gap in China in the areas of “steam + electric heated molten salt” auxiliary coal-fired power peak-shaving and frequency modulation, as well as thermoelectric decoupling.



VERTICAL MOLTEN-SALT STORAGE TANK

Utilizing a circular pipe preheating design, it ensures uniform heating and low energy consumption, making it suitable for high-temperature molten salt storage.



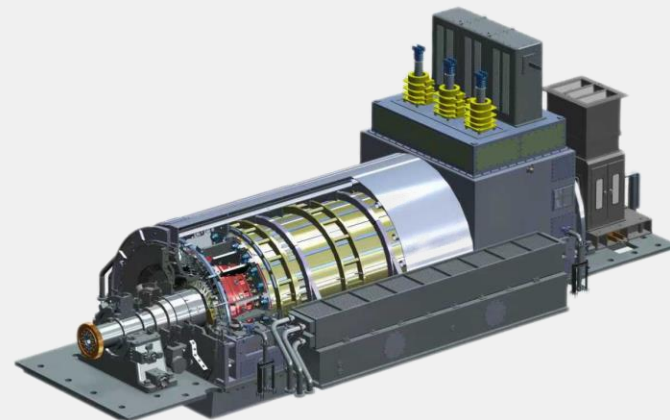
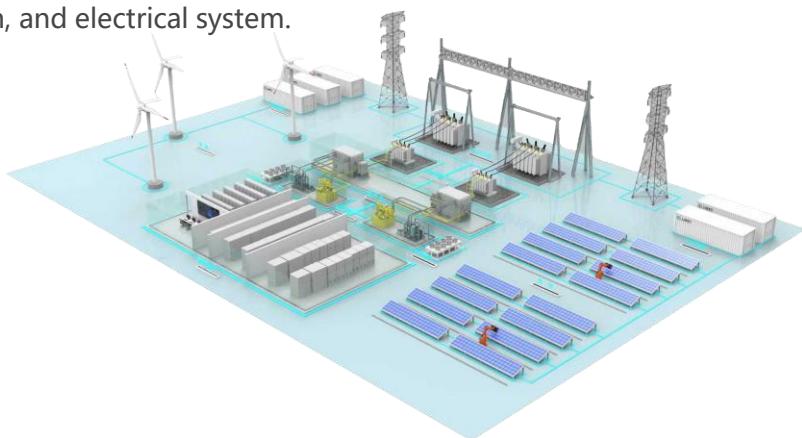
HORIZONTAL MOLTEN-SALT STORAGE TANK

Its compact structure is suitable for space-constrained scenarios and supports efficient thermal energy storage and release.

CONDENSER

WORLD-LEADING INTELLIGENT CONDENSER ISLAND SYSTEM SOLUTIONS

Shanghai Electric is committed to providing users with customized integrated condenser island solutions, including the main condenser, lubricating oil system, cooling system, smart monitoring system, and electrical system.



NEW GENERATION CENTRALIZED CONDENSER

300Mvar

Double-Water-Cooled Condenser

Excellent dynamic response, exceptional security and reliability, and advanced digital intelligence operation — it delivers comprehensive grid support including static/dynamic reactive power, short-circuit capacity, and rotational inertia.

PENASCO SOLAR PARK PHASE II PROJECT, MEXICO

China's first synchronous condenser project for overseas export, China's first 60Hz high-speed synchronous condenser project, and China's first flywheel-grid combination high-inertia synchronous condenser project.



Rated Capacity

25Mvar

Rated Speed

3600r/min

Kinetic Energy of
Standalone Condenser

70MW•s

Inertia Time Constant of
Standalone Condenser

5.6s

Kinetic Energy of Flywheel-
Integrated System

140MW•s

Inertia Time Constant of
Flywheel-Integrated System

11.2s

INDUSTRIAL EQUIPMENT

DRIVING INDUSTRIAL DECARBONIZATION

Efficient Technologies,
Integrated Solutions



INDUSTRIAL DRIVES

- Industrial Turbines
- Electric Motors
- Industrial Boilers
- Power Electronics & Control Systems
- Pulverizing Equipment
- Fans



CHEMICAL EQUIPMENT

- Gasification Island Core Equipment
- Waste Heat Utilization System Equipment
- Metallurgical Engineering System Equipment
- High-End Chemical Equipment for Multiple Industries

INDUSTRIAL TURBINES

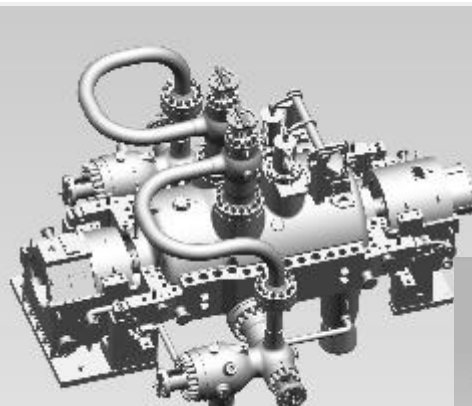
Shanghai Electric offers a full range of modular industrial turbine products, covering multiple fields such as metallurgy, petrochemicals, papermaking, and new energy. With a mature and reliable advanced technology platform it can leverage, it provides efficient energy system solutions based on customer needs, and achieves modularization, serialization, and intelligent design for customized solutions.

Mature And
Reliable
Advanced
Technology
Platform

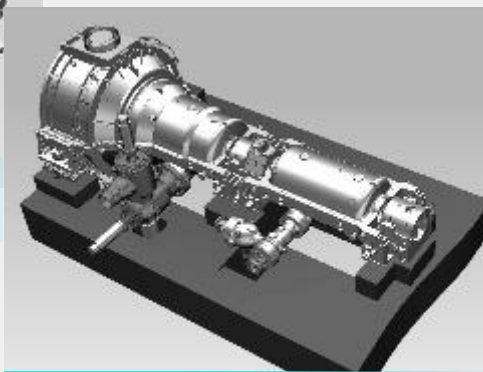
Modular
Design

Serialization
Design

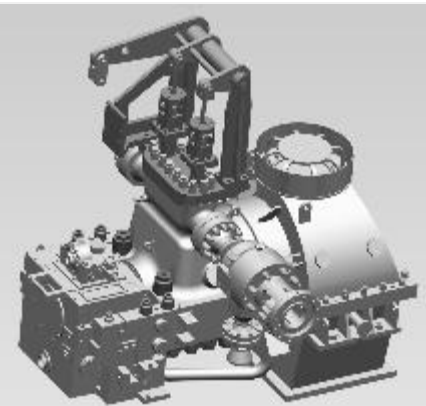
Smart
Design



HIGH-EFFICIENCY BACK-PRESSURE STEAM TURBINE



SOLAR THERMAL TURBINE



DRIVE STEAM TURBINE

AKSAI HUDONG 750MW CSP + PV PILOT PROJECT

Shanghai Electric supplied the project's 110MW thermal island, including a steam turbine specifically engineered for CSP applications. Utilizing advanced flow design, axial exhaust technology, and rapid start-stop thermal stress control, the turbine delivers flexible, efficient, and reliable operation with exceptional cycling capability and wide-load range. The project achieved full-capacity grid connection in November 2024, commissioning China's largest tower CSP facility.

SHANDONG YULONG ISLAND REFINING AND CHEMICAL PROJECT

In Shandong Yulong Petrochemical Industrial Park, 6 high-temperature and high-pressure boilers are planned, equipped with 5 extraction back-pressure steam turbine generator sets. For the ultra-high pressure, high temperature extraction back-pressure steam turbine provided by Shanghai Electric, a back-flow structure is employed and advanced AIBT flow design technology is utilized to achieve efficient energy saving.

ELECTRIC MOTORS

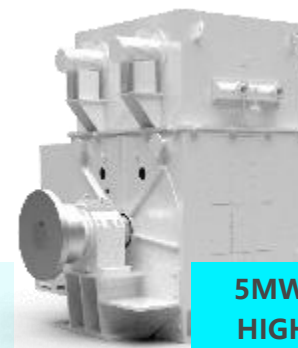
TRANSFORM. ENERGIZE. PROPEL.

In the field of electric motors, Shanghai Electric's product lines encompass synchronous, asynchronous, and DC technologies, covering ten major industries such as metallurgy, thermal power plant, chemical industry, oil & gas, water conservancy, Cement, ship propulsion, mining, nuclear power, light industry, and testing bench, leading the advancement of electric motor technology in China.

Market share of large and medium-sized AC and DC motors in China :



**20MW-150MW
HIGH-CAPACITY HIGH-SPEED
SYNCHRONOUS MOTOR**



**5MW-11MW
HIGH-CAPACITY SYNCHRONOUS MOTOR
FOR DOUBLE-DRIVEN GRINDING MILL**



CHN ENERGY BAOTOU COAL-TO-OLEFIN UPGRADE DEMONSTRATION PROJECT

With a construction scale of 2 million tons of methanol and 750,000 tons of polyolefin products annually, the project employs fully independent and autonomous technology, serving as a demonstration project for green chemical upgrades that leads the technology upgrade of China's modern coal chemistry industry. Shanghai Electric provides tailored motors for the 2×105,000 Nm³/h (O₂) air separation plant compressors for this project.

INDUSTRIAL BOILERS

Deeply engaged in the industrial field, Shanghai Electric has made numerous typical achievements of first sets both domestically and internationally and cumulatively provided over 1,100 industrial boilers to clients in industries such as coal chemical, petrochemical, steel metallurgy, new materials, new energy, and environmental protection.

765 Industrial
Coal Powder Boilers

170 CFB
Industrial Boilers

80 Oil And Gas
Industrial Boilers

50 Waste-To-
Energy Boilers With
Residual Heat

50+ Special
Industrial Boilers

1,100+
Industrial Boilers
Have Been Provided



SHANGSHI BAOSHAN HIGH-PARAMETER WASTE-TO-ENERGY PROJECT

Shanghai Electric supplies HRSG and steam turbine generator set
World's largest single-site waste-to-energy plant with high-parameter external reheat cycle

13 MPa.g

450 °C



GUANGZHOU HUANTOU CONGHUA HIGH-PARAMETER WASTE-TO-ENERGY PROJECT

Shanghai Electric supplies HRSG and steam turbine generator set
World's highest-parameter waste-to-energy steam cycle power plant

13 MPa.g

485/430 °C



GUANGXI SHENGLONG SUPERCRITICAL GAS-FIRED POWER GENERATION PROJECT

Shanghai Electric supplies gas-fired boilers
Reduction in CO₂ reaches **85.4** million tons every year

25.4 MPa.g

605/603 °C



RONGXIANG THERMAL POWER DUAL-FUEL (PULVERIZED COAL/NATURAL GAS) BOILER PROJECT

Shanghai Electric supplies China's first newly built multi-fuel boiler for coal and natural gas

Currently 7 multi-fuel industrial boiler units under construction

POWER ELECTRONICS & CONTROL SYSTEMS

Shanghai Electric develops HV/LV VFDs and PCS for energy storage/solar/wind applications, delivering intelligent energy conversion via high-efficiency power transfer and smart control. Our integrated solutions enable comprehensive system interoperability across industrial, renewable, and grid sectors, advancing sustainable energy transitions.

High
FrequencyHigh
EfficiencyHigh
PerformanceHigh
ReliabilityIntelligent &
IntegratedSmart
Control

WANHUA CHEMICAL PENGLAI AMMONIA SYNTHESIS PROJECT

Shanghai Electric delivered a 10
kV / 16.5 MVA high-voltage VFD.



HV VFD

MV-Series
Water-Cooled
HV VFDFRENIC
Series LV
VFDPVI1500CC-3
Energy
Storage PCS

PULVERIZING EQUIPMENT

LEADER OF GRINDING EQUIPMENT AND EXPERT OF HEAVY EQUIPMENT

As one of China's leading manufacturers of grinding equipment, Shanghai Electric has a portfolio of tens of product series including low, medium and high-speed grinders, and its business covers the full life cycle of such products as design, manufacturing and after-sales service.

>35%

Market Share
In China

400+GW

Global Installed
Base

5,500+

Coal Mills
Delivered
(High/Medium/
Low-Speed)



HP1303DYN COAL PULVERIZER



OVERFLOW TYPE MINING BALL MILL

Widely used in the grinding field for various types of ore materials



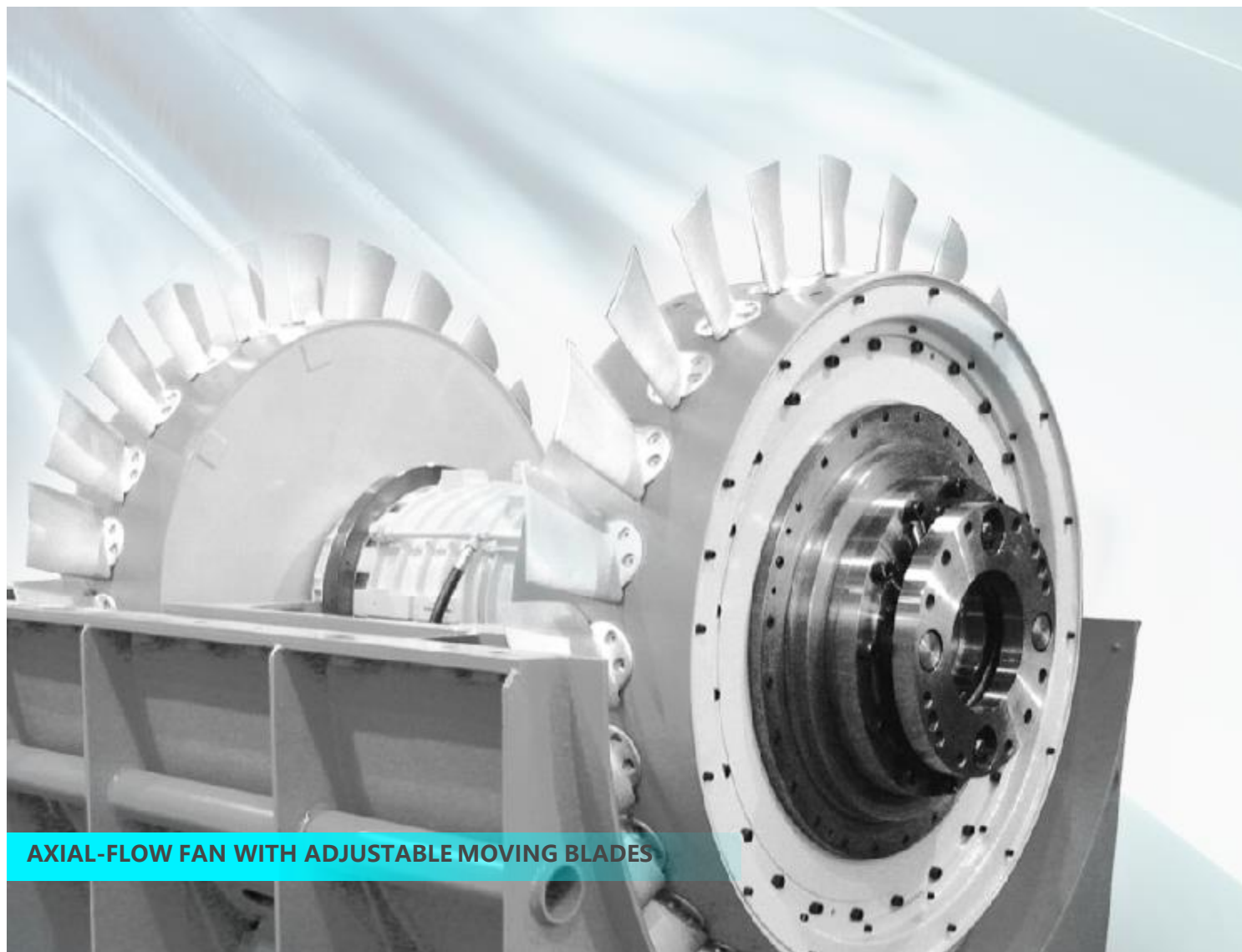
Shanghai Electric has long provided major domestic steel groups such as Baowu, Shandong Iron and Steel, and Baotou Steel with various types of cold and hot rolling mills and supporting equipment.

FANS

Shanghai Electric integrates Hitachi technology with proprietary R&D to deliver energy-efficient fans/compressors for chemical, nuclear, thermal power, metallurgy, environmental, and wind tunnel sectors. We've supplied thousands of boiler start-up fans to hundreds of power stations, achieving about 50% domestic market share with unit capacities up to 1,350MW. Our power plant fans are exported to 30+ countries/regions including USA, France, Japan, Italy, Norway, Turkey, Iran, India, and Southeast Asia.

Near **50%**
Market Share In China

Maximum Unit Capacity Up To
1,350MW



AXIAL-FLOW FAN WITH ADJUSTABLE MOVING BLADES

ADVANCED CHEMICAL EQUIPMENT

Shanghai Electric possesses core technologies and plenty of experiences in fields such as low-carbon energy chemical industry, fine chemical industry, metallurgical engineering, and other supporting projects. By combining Shanghai Electric's rich experience in high-end equipment manufacturing with its first-class engineering management capabilities, it can provide customers with a one-stop system solution that includes engineering consulting, engineering design, core equipment supply, construction and installation, commissioning, operation and maintenance services.



LARGEST HIGH-PRESSURE REACTOR FOR HYDROMETALLURGY OF NICKEL INDUSTRY IN CHINA

Reactor equipment with the largest volume and highest pressure in the metallurgical field



COMPLETE NICKEL POX LEACHING PLANT

Annual Output Of
150,000 Tons Of
Precursors

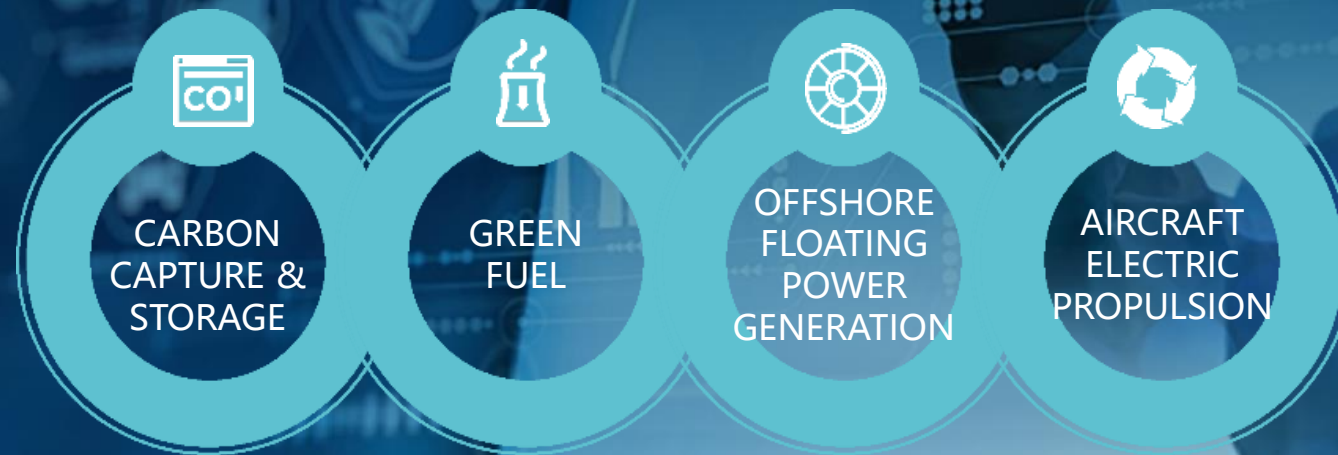


ENTRAINED-FLOW GASIFIER

Annual Output Of
70,000 Tons Of Metal
Nickel And Cobalt

ADVANCED RESEARCH

***FROM LAB TO INDUSTRY:
ENGINEERING SCALABLE DECARBONIZATION***



CARBON CAPTURE & STORAGE

The CCS technology is a new generation of post-combustion CO₂ capture technology successfully developed by Shanghai Electric over more than ten years. The technology has undergone laboratory-scale tests, a 2,000 tons/year pilot test, and industrial demonstration verification from 10,000 to 250,000 tons/year, with a regeneration energy consumption as low as 2.3 GJ/ton of CO₂, reaching the domestic leading level.

Advanced Multi-Component Solvent
Optimized formulation, high
absorption efficiency, negligible
degradation

Rich-Split Process

Regenerative heat utilization,
reduced energy consumption

Isothermal Absorption

In-column cooling, enhanced
absorption efficiency

High-Efficiency Lean/Rich HX System

Optimized heat exchange network

Advanced Packing

Low pressure drop, high mass
transfer efficiency

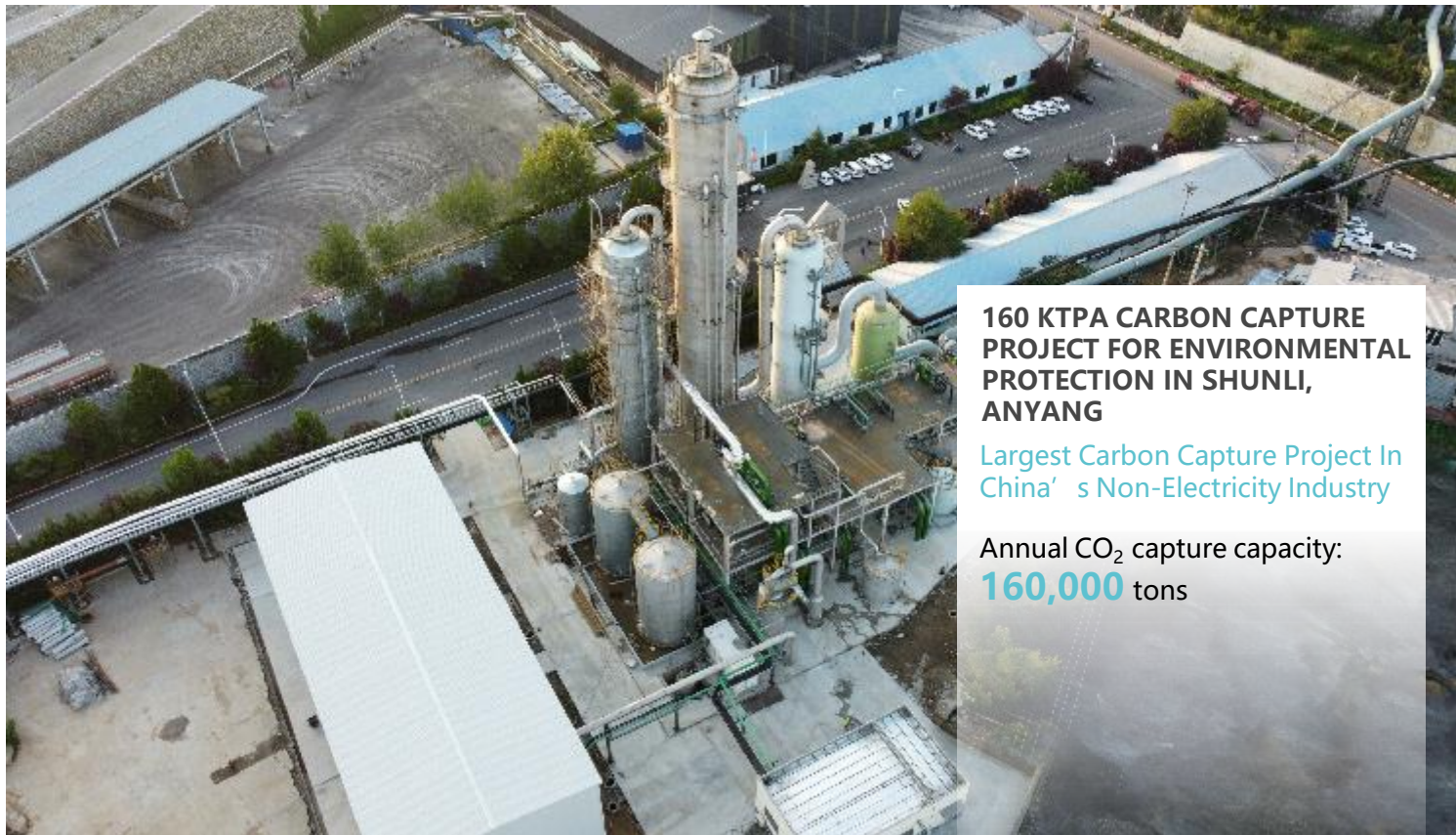
Flue Gas Pretreatment

Effective protection of CO₂
absorbent

TIANYING LIAOYUAN 150 KTPA GREEN METHANOL PROJECT WITH SUPPORTING 250 KTPA FLUE GAS CARBON CAPTURE PROJECT

One of China's first batch of projects to couple biomass power generation flue gas carbon capture with green hydrogen to produce green methanol

The biomass power generation plant's core technologies such as flue gas CO₂ capture technology package (250 ktpa CO₂), engineering design, absorbent, and packing are provided by Shanghai Electric.



**160 KTPA CARBON CAPTURE
PROJECT FOR ENVIRONMENTAL
PROTECTION IN SHUNLI,
ANYANG**

Largest Carbon Capture Project In
China's Non-Electricity Industry

Annual CO₂ capture capacity:

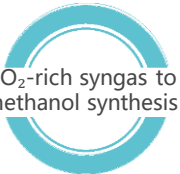
160,000 tons

GREEN FUEL

Shanghai Electric possesses multiple core technologies and equipment related to green fuel synthesis, mainly includes new energy power generation, water electrolysis production and storage , biomass gasification, carbon capture, green fuel synthesis, energy-chemical integration, engineering consulting and design, etc. It can provide customers with solutions for three major green fuel systems: green methanol, green ammonia, and sustainable aviation fuel (SAF), based on different resource conditions and market demands.



Pure oxygen pressurized biomass
gasification technology



CO₂-rich syngas to
methanol synthesis



Flexible low-pressure synthetic
ammonia technology



Sustainable aviation fuel
synthesis technology



INTEGRATED WIND POWER COUPLING BIOMASS GREEN METHANOL DEMONSTRATION PROJECT IN TAOAN

CHINA'S FIRST PROJECT UTILIZING WIND POWER OFF-GRID HYDROGEN PRODUCTION COUPLED WITH BIOMASS GASIFICATION TO PRODUCE GREEN METHANOL

The project adopts pure oxygen pressurized biomass gasification, wind power off-grid hydrogen production, and CO₂-rich syngas to methanol synthesis technology to efficiently convert agricultural and forestry waste into high-value green methanol through local consumption of wind power, achieving an efficient utilization of biomass energy and wind energy, while generating considerable economic benefits.

[Learn More >](#)

Oxygen-Blown Biomass
Gasification Units
2×300 Tons/Day

Installed Off-Grid Wind
Power Capacity:
67.2 MW

8,200 Nm³/h Hydrogen
Generation Device

10-Ton Hydrogen
Storage Tank

50,000
Tons/Year Green
Methanol Production
Facility

OFFSHORE FLOATING POWER GENERATION

MOBILE SUPPLY STATION FOR OCEAN OPERATIONS

Shanghai Electric offshore floating platforms deliver integrated power, thermal, and freshwater solutions for maritime operations and remote islands. Featuring industry-leading single-unit capacity with class-certified technology, we set new benchmarks for large-capacity floating power stations globally.



WORLD'S LARGEST

80MW generator used
for the floating power
generation platform

IP56

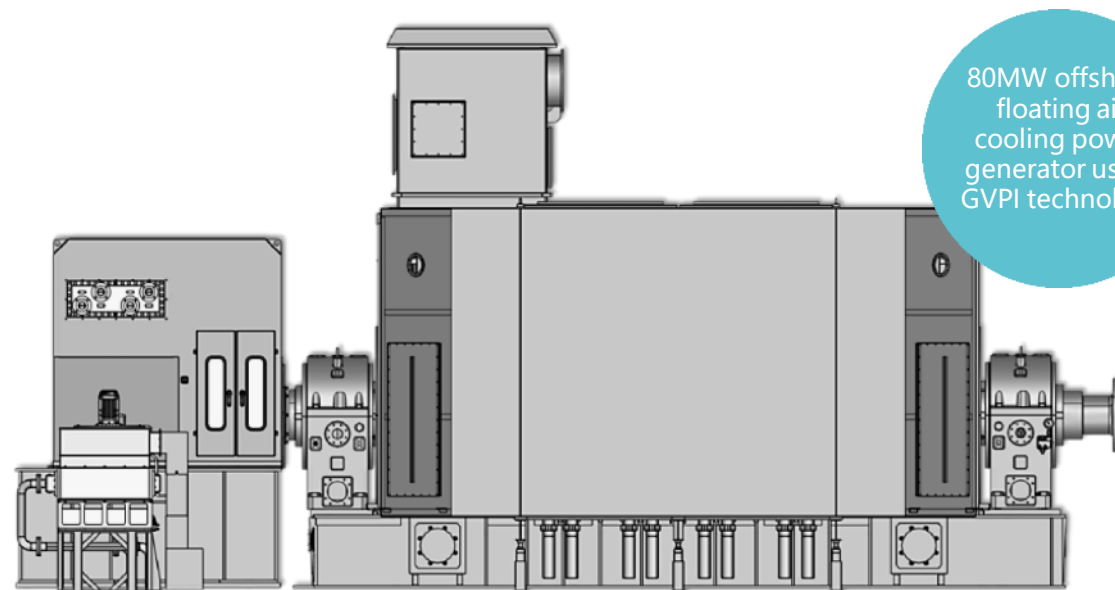
Generator
protection level
(dust-proof, salt
spray resistant)

TECHNOLOGICAL LEADERSHIP

World-class
technology,
achieving an
efficiency of 98.65%

PERFORMANCE OF THE FIRST UNIT

Installation and
commissioning have
been completed



80MW offshore
floating air
cooling power
generator using
GVPI technology

AIRCRAFT ELECTRIC PROPULSION

High-capacity hybrid electric propulsion systems significantly enhance aircraft performance, boost efficiency, and reduce engine power demands. Aligned with China's "Green Aviation" strategy, Shanghai Electric pioneers aircraft electric drive research and application, delivering integrated hybrid propulsion solutions. The Group is developing 600 kW electrically excited, 1 MW electrically excited, and 1 MW permanent magnet starter-generators. These span 600 kW to 1,000 kW, operate at up to 20,000 rpm, and achieve 5 kW/kg power density—covering both motor technologies and matching international benchmarks for commercial aircraft.



The rated power far exceeds that of similar products used in one of the world's largest commercial single-unit passenger aircraft, Boeing 787.



An innovative use of winding oil cooling scheme, and a pioneer in the field of high-speed motors both domestically and internationally



Three-level brushless electric excited synchronous motor with compact structure and excellent shaft system characteristics



Advanced insulation design technology can meet the operational requirements of thin-air environments at high altitudes

INTEGRATED SERVICES

*ACCELERATING NET-ZERO FUTURE:
BUILD, OPERATE, OPTIMIZE*



ENERGY ENGINEERING

- Coal-fired power projects
- Desulfurization and denitrification projects
- Gas turbine projects
- Solar power projects
- Wind power projects
- Air-cooled projects
- Integral energy projects
- Energy storage projects
- Chemical engineering and technology
- Coking projects
- Desalination projects

PLANT LIFECYCLE SERVICES

- Spare Parts Service
- Equipment upgrading
- Overall modification service
- Overhaul service
- Maintenance services
- Long-term maintenance service agreement
- Technical support
- Other services

SMART ENERGY SOLUTIONS

- **ELlumix²** smart energy platform

ENERGY ENGINEERING

A SUPPLIER DEDICATED TO PROVIDING CLIENTS WITH FULL LIFE-CYCLE SOLUTIONS

Adhering to the energy concept of "high efficiency, cleanliness, greenness and environmental protection", Shanghai Electric can provide full life-cycle solutions including EPC, complete sets of equipment, unit operation and maintenance modification and overhaul, engineering technical services, project development and financing services in the fields of thermal power, gas turbines, solar power (CSP + PV), wind power, energy storage, biomass power generation, waste power generation, distributed energy, seawater desalination, etc.



Ranked 40th in the *ENR Top 250 International Contractors List*



Credit rating of AAA from China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME); A-level enterprise for foreign contracting projects in China for several consecutive years



THAR BLOCK-1 ENERGY INTEGRATED PROJECT

First overseas BOO project, energy integrated project, mining project, first tower furnace + fan mill solution unit



BALINGIAN 2×300 MW COAL-FIRED POWER PLANT PROJECT IN MALAYSIA

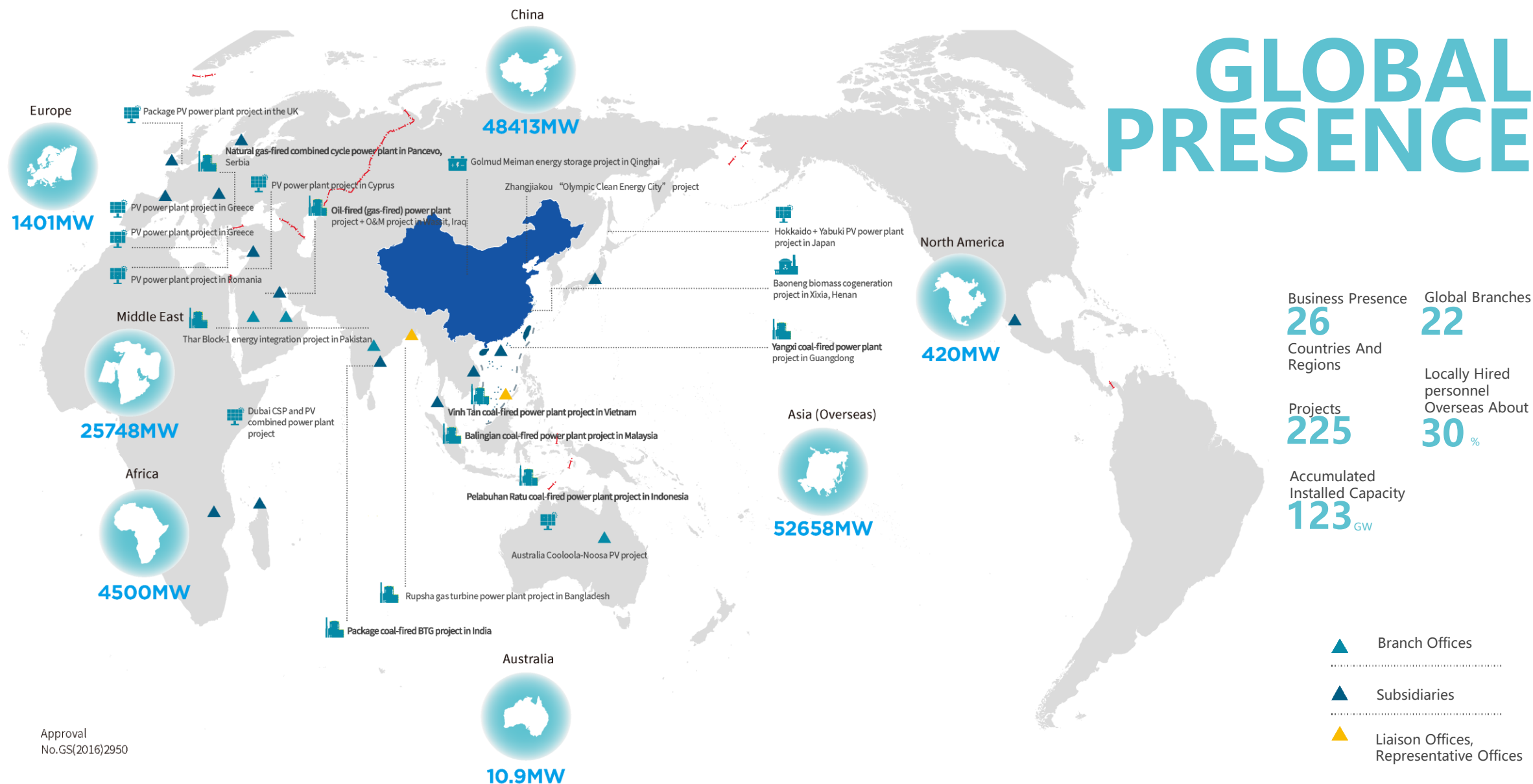
First set of independently developed 300,000 CFB boilers with proprietary intellectual property



JERAM WASTE TO ENERGY POWER PLANT PROJECT IN SELANGOR, MALAYSIA

Malaysia's green energy and energy-saving emission reduction demonstration project;
Daily garbage processing: 2,900 tons

GLOBAL PRESENCE



Business Presence
26
Countries And
Regions

Global Branches
22

Projects
225

Locally Hired
personnel
Overseas About
30 %

Accumulated
Installed Capacity
123_{GW}

PLANT LIFECYCLE SERVICES

DEFINING RETROFITTING LEADERSHIP: HIGH-PERFORMANCE UPGRADES POWERING GLOBAL FLEETS

Shanghai Electric deliver lifecycle-maximizing services for power plants, covering: energy/heating/flexibility/emission renovations; coal-fired + new energy adaptations (auxiliary/comprehensive); synchronous condensers; decarbonization; parts pooling/LTAs; O&M; overhauls; relocations; training. Solutions span thermal ($\leq 1,240\text{MW}$), gas-steam combined cycle, nuclear units, and environmental systems. As Shanghai's service-manufacturing demonstrator, ENEK (www.360enek.com) provides one-stop energy e-commerce, boosting industry connectivity and development.



SIX MAJOR ADVANTAGES



The largest fleet
of operational
units in China



Strong technical
team support



Customized
solutions



Fully-equipped
"mobile factory"



"24-hour"
standby service



Spare parts pre-
judgment and
preparation

PLANT LIFECYCLE SERVICES

CHINA'S TOP-TIER (5A) POWER GENERATION UNITS :

Shanghai
Electric's
Share

Supercritical
600MW Wet
Cooling

53.3%

Sub-Critical
600MW Wet
Cooling

100%

Sub-Critical
300MW Wet
Cooling

60%

* Based on China Electricity Council (CEC) rankings for 2024. 5A designates the highest rating for efficiency and reliability.



CHN ENERGY NINGHAI POWER PLANT ULTRA-SUPERCritical UNIT COMPREHENSIVE MODIFICATION PROJECT

Intelligent energy saving and carbon reduction for 1,000MW power plants
Breakthrough in offering the first complete set of equipment

Key national project that has received special funding for investment from the central government within its budget

Reduced rated coal
consumption

8.6 g/kWh

Reduced factory
power usage rate

2.18 %



CHN ENERGY TAISHAN POWER PLANT UNIT 2 UPGRADE-PARAMETER RETROFIT PROJECT

World's first sub-critical 600MW-class unit with dual-temperature lifting technology up to 600°C

Rated Power Supply
As Low As

288.58 g/kWh

Reduced Annual Average Coal
Consumption For Power Supply

30 g/kWh

Reduced Rated Coal
Consumption

25.94 g/kWh

Reduction In Annual
Emission

234,000 Tons

SMART ENERGY SOLUTIONS

Shanghai Electric provides electrical, instrumentation, control, and intelligent software design, integrated supply, and commissioning services.

The smart energy control platform **Ellumix**[®] independently developed by the company, integrates Shanghai Electric's industrial equipment expertise, and achieves real-time data collection, communication, and analysis of equipment, early warning and diagnosis of faults, closed-loop optimization and control of operations, effectively improving equipment operation and maintenance efficiency while reducing operating costs.



Ellumix SMART ENERGY MANAGEMENT PLATFORM

Shanghai Electric's independently developed **Ellumix**[®] features cross-hardware platform capabilities and can serve as a universal control platform for executing standard control algorithm configurations.

A high degree of consistency will be maintained for the configuration of platform. Therefore, when the control system hardware is upgraded/modified, users' original control configurations can still be completely inherited, maximizing the protection of users' investment costs.

DENOX SYSTEM AMMONIA-TO-UREA CONVERSION PROJECT

We provided a complete set of services for this project, including design, integration, supply, commissioning, and maintenance of the PLC control system of urea area, DCS system expansion of ammonia area, SIS system transformation, as well as the corresponding electrical cabinets, control cabinets, instruments etc., helping users to construct a safe, reliable, and efficient denitrification system as planned.

SUSTAINABLE DEVELOPMENT

**Where Responsibility Meets Warmth,
Where Innovation Sparks Joy.**
Empowering lives with purpose.
advancing every step with care.



Shanghai Electric upholds its social responsibilities and supports public welfare initiatives while pursuing robust operational growth. We actively contribute to national strategies such as Rural Revitalization and the Belt and Road Initiative, address critical social challenges, and leverage our expertise and resources to drive philanthropic programs—advancing harmonious coexistence with society.



SUSTAINABLE DEVELOPMENT

Building a Sustainable Future

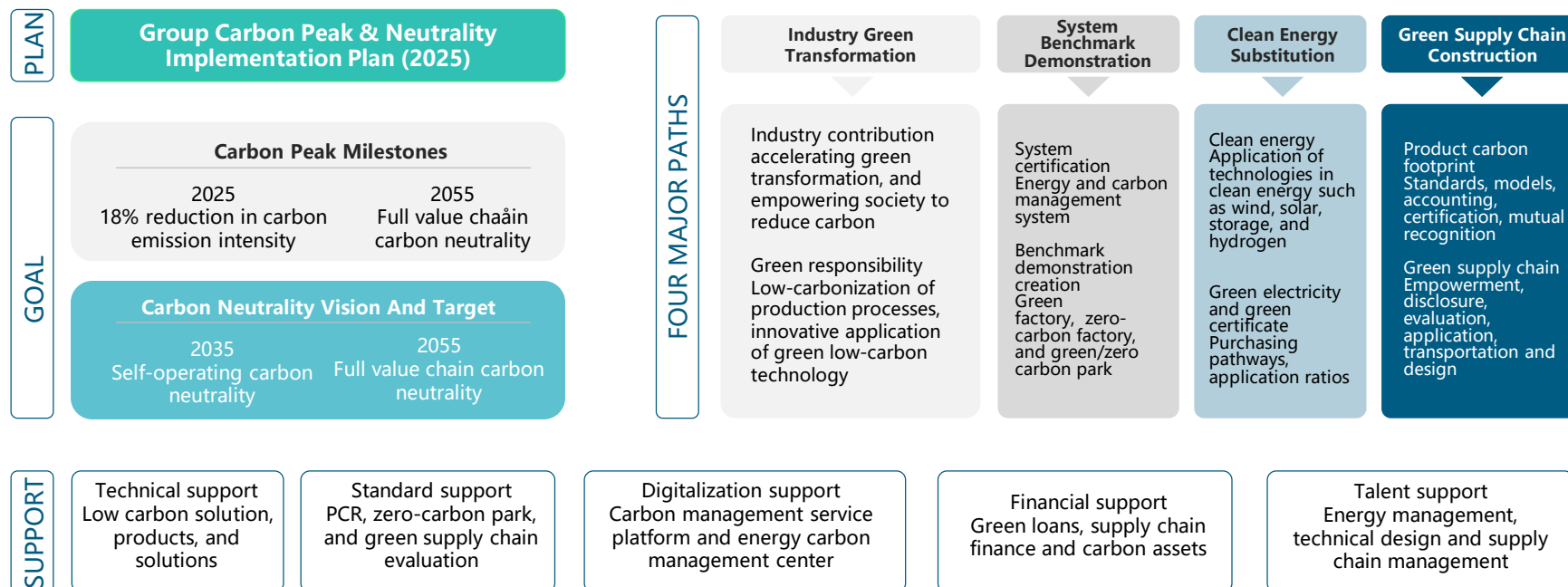
Total CO₂ reduction empowered by
Shanghai Electric for society in 2024

202,647,002 tons

BUILDING A SUSTAINABLE FUTURE
ADVANCING ECOLOGICAL PROGRESS TO
HARMONIZE HUMANITY AND NATURE

Ensure Carbon Peak By 2030

- 1 Promoting changes to address climate
- 2 Utilizing resource for circular development
- 3 Improving systems for environmental friendliness
- 4 Green governance enabling cleaner production
- 5 Respecting nature and prioritizing protection





***SHANGHAI ELECTRIC
CREATE OUR FUTURE TOGETHER***

