





Welcome to **TPRI**





Thermal Power Research Institute (*TPRI*)



OUR HISTORY

2003

TPRI, share-held by the newly created five major power generation Corps.

2005

Host organization of Huaneng Technology Development Center

1997

TPRI of the State Power Corporation

1994

TPRI of the Ministry of Electric Power

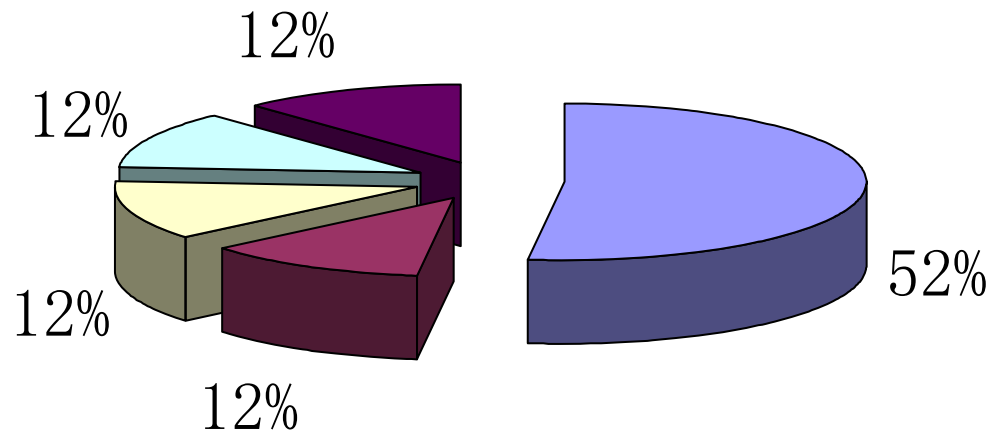
1965

Moved to Xi'an from Beijing, Xi'an TPRI was established

1951

Part of EPRI, the Ministry of Fuels Industry

OWNERSHIP DISTRIBUTION OF TPRI



■ China Huaneng Group (CHNG)

■ China Datang (Group) Corporation (CDT)

■ China Huadian Corporation (CHD)

■ China Guodian (Group) Corporation (GD)

■ China Power Investment Corporation (CPI)



R&D DEPT. AND EMPLOYEES

- 21 specially found R&D and service departments
- 9 administration offices
- 2 branch institutes (Beijing / Suzhou)
- 1200 employees (89% technical staff)



Specially founded R&D and service departments

National Engineering Research Center for Clean Coal Combustion (NERC)

- CFB Boiler Dept.
- PC Boiler Dept.
- Boiler System & Equipment Dept.
- Boiler Emission Control Dept.
- Boiler Combustion & Emission Control Dept.(Suzhou)
- Fuel & Combustion Lab.

Information Technology Center

- Information & Supervision Dept.
- Maintenance Management & Software Technology Dept.

Automation Technology Center

- Field-bus System & Control Technology Dept.
- Automation Engineering & Simulation Dept.
- Automation Engineering Dept. (Beijing)

- Power Utility Performance Dept.
- Turbine & Thermal Cycle Dept.

- Chemical Engineering Dept.
- Water & Wastewater Treatment Dept.
- Water Treatment Chemicals Dept.

- Materials Dept.

- Power Utility Technical Supervision Dept.
- Power Utility Construction Supervision Dept.

- Commissioning Technology Dept.

- GreenGen Dept.



OUR R&D FIELDS



- Operation technology of thermal power generating units
- Power plant automation and Information management
- Clean coal power generation technology
- Nuclear power generation and power generation by renewable energy resources



OUR BUSINESS SCOPE

- R&D programs/projects
- Consultation and technical services
- Products development
- Engineering Contracts



MAJOR TECHNICAL SERVICES



- Feasibility study
- Quality supervision
- Unit commissioning
- Performance tests
- Operation optimization
- Technical consultation
- System diagnosis
- Failure analysis and handling
- Technical modification / retrofitting



R&D ACTIVITIES AND SERVICES (BOILER SIDE)

- Coal, ash and limestone characterization
- P.c. preparation/combustion optimization, monitoring, diagnosis etc.
- Low NOx combustion (burners, system)
- Environmental protection(DeSOx, DeNOx, Dedust)
- Boiler auxiliary equipment (pulverizing system, fans,etc.)
- CFB boiler and auxiliary equipment
- Fly ash utilization



1MW_{th} COMBUSTION TEST FACILITY





1MW_{th} CFB TEST FACILITY





FAN TEST RIG



R&D ACTIVITIES AND SERVICES (TURBINE SIDE)

- Performance test
- Vibration monitoring and diagnosis
- Operation condition assessment
- Thermal system optimization
- Turbine and turbine auxiliary equipment, regenerative cycle and cooling system
- Unit insulation and tightness of boiler ceiling





UTILITY BOILER COMBUSTION TEST VAN

R&D ACTIVITIES AND SERVICES (WATER/OIL CHEMISTRY)



- Water treatment technology and equipment
- Oil / gas treatment technology and equipment
- Water saving and waste water reutilization
- Anti-corrosion, anti-fouling and demineralization
- Chemical analysis and testing technology
- Water treatment chemicals





R&D ACTIVITIES AND SERVICES (METAL MATERIALS)

- Microstructure and performance
- Quality inspection and failure diagnosis
- Operation status and life evaluation of equipment
- Structure strength analysis
- Welding and repairing
- Safety and performance test of pressure vessels



LAB FOR MATERIAL RESEARCH

实验室

- MTS实验室
- 电拉实验室
- INSTRON实验室
- 蠕变实验室

国电热工研究院材料重点实验室



R&D ACTIVITIES AND SERVICES (I&C)

- Distributed control system (DCS, DEH)
- Power plant auxiliary system control
- Simulation system of power plant operation
- Field bus control system (FCS)
- Power plant control technology and strategy





TECHNICAL SUPERVISION AND EVALUATION

- Manufacturing supervision and pre-erection inspection
- Technical supervision in thermal power plant
- Energy conservation and consumption reduction Evaluation
- Safety and reliability evaluation
- Technical modification evaluation
- Thermal power metrology (measurement)



COMMISSIONING SERVICE



- SC and USC power generating units
- IGCC units
- CFB boiler units
- Air-cooling units
- FGD and SCR equipment and system
- Conventional island of nuclear power plant
- Unconventional power generating units (wind)



R&D ACTIVITIES AND SERVICES (GREENGEN)



- Integrated coal gasification combined cycle (IGCC)
- Natural gas combined cycle (NGCC)
- Coal gasification and syngas clean-up
- Hydrogen production from coal
- Fuel cell and hydrogen turbines

TPRI's Gasification

- Two Stages
- Entrained Flow
- Dry Feed



Pilot Scale:
36t/d(10MW_{th}), 2005



Bench Scale: 0.7t/d, 1998

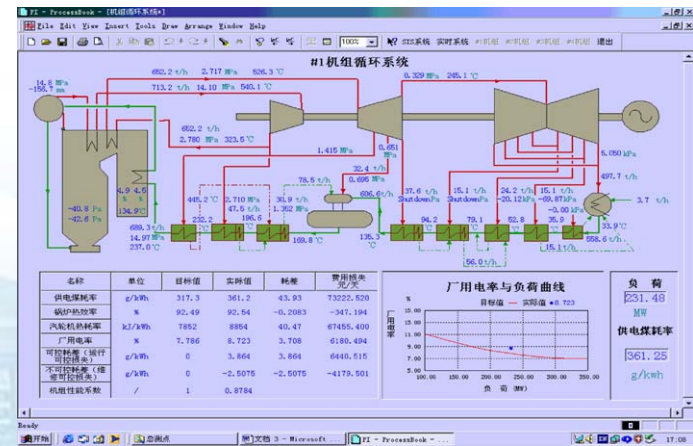


Commercial Scale: 2000t/d, 2008

R&D ACTIVITIES AND SERVICES (INFORMATION & SUPERVISION)



- Power Group (group-level) / power plant (plant-level) real-time supervisory information technology and system
- Operation optimization management technology and system used for thermal power generating units
- Technology for remote-diagnosing system
- Condition-based maintenance technology



R&D ACTIVITIES AND SERVICES (OTHERS)

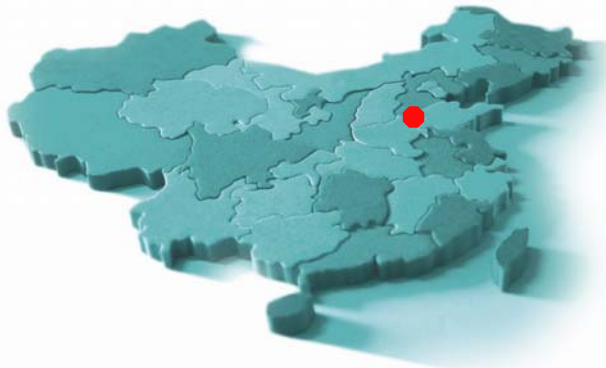


- SC and USC power generation technologies
- Power plant design optimization
- Technical standards
- Air cooling system for thermal power plants
- Renewable energy for power generation (such as wind power, solar power and biomass, etc.)
- Nuclear power



OUR BEIJING BRANCH

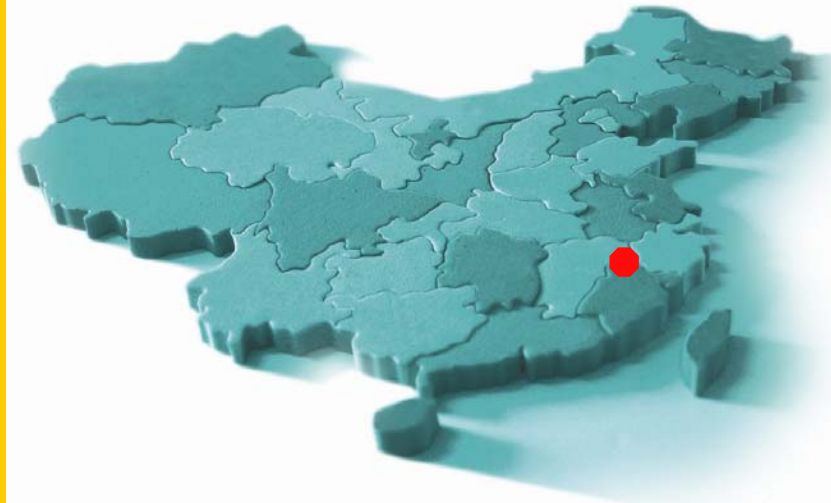
- Marketing
- R & D of GreenGen technology
- R & D of new power generation technologies
- R & D of advanced automation & software technologies





OUR SUZHOU BRANCH

- Performance test
- Operation optimization
- Boiler retrofiting
- SCR
-





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Thanks

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