

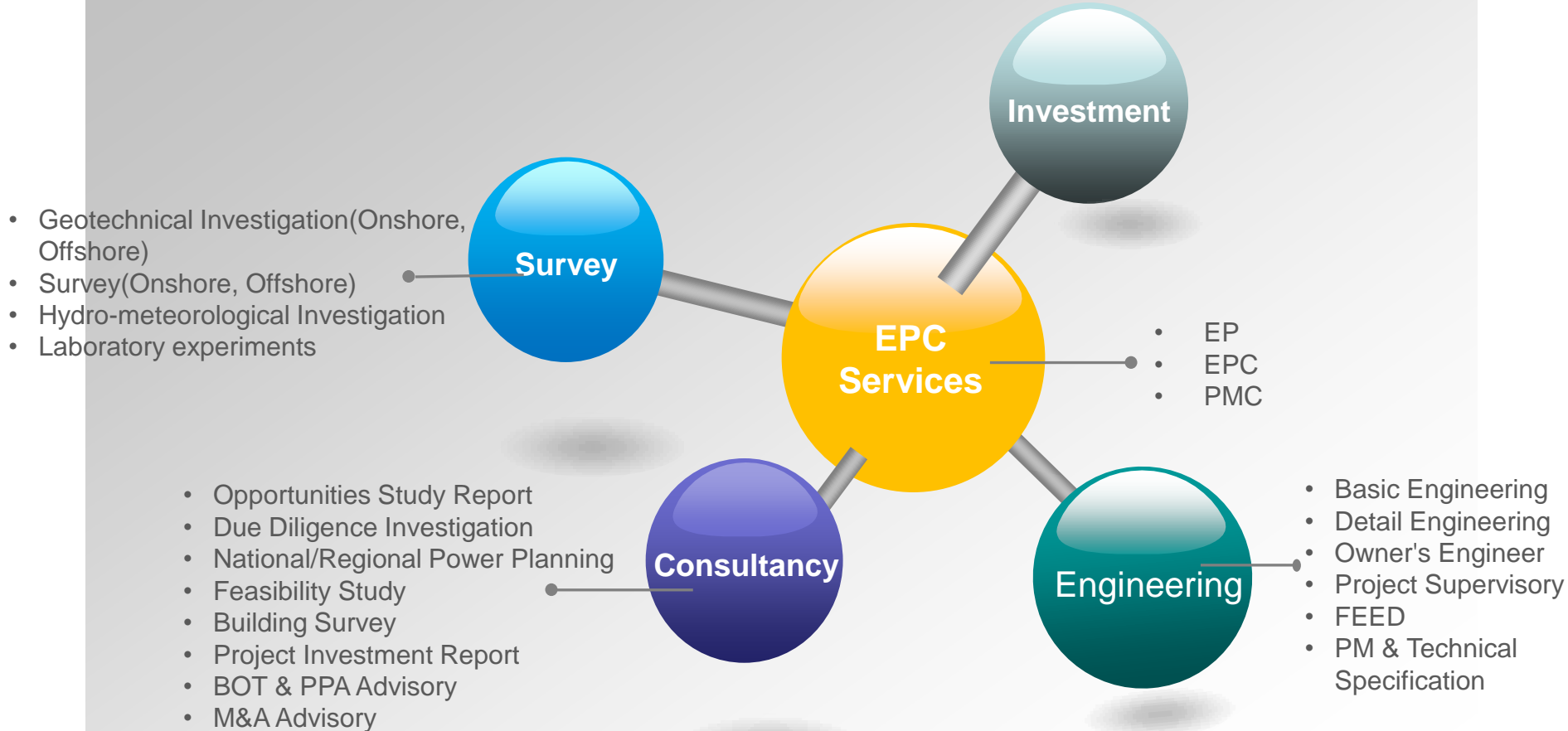


GEDI

GUANGDONG
ELECTRIC POWER DESIGN INSTITUTE CO., LTD
OF CHINA ENERGY ENGINEERING GROUP

Scope of Services

GEDI can provide wide range of engineering services, the scope of business including:



Main Business Fields

Power Generation

Coal Fired

(25MW ~1000MW)



Nuclear

(1000MW~1750MW)



Oil /Gas

(40MW~600MW)



Renewable Power

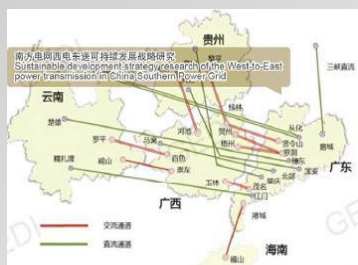
(Hydraulic ,
Wind , Biomass,
Solar , Geothermal)



Main Business Fields

Power Transmission & Distribution

Power Systems Planning



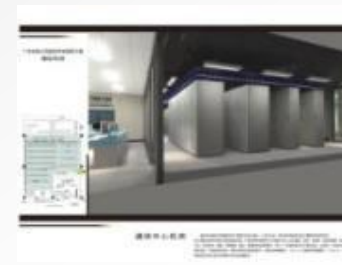
Transmission and Distribution Systems
(AC: 110kV-1000kV
DC: ± 500 kV- ± 1100 kV)



Substation
(AC: 110kV-1000kV
DC: ± 500 kV- ± 1100 kV)



Distribution Network Control



Main Business Fields

Building & Infrastructure

Commercial Building
and Public Works



Environment
(FGD, De-Nox Plant,
CO₂ Capture,
Waste Water Treatment)



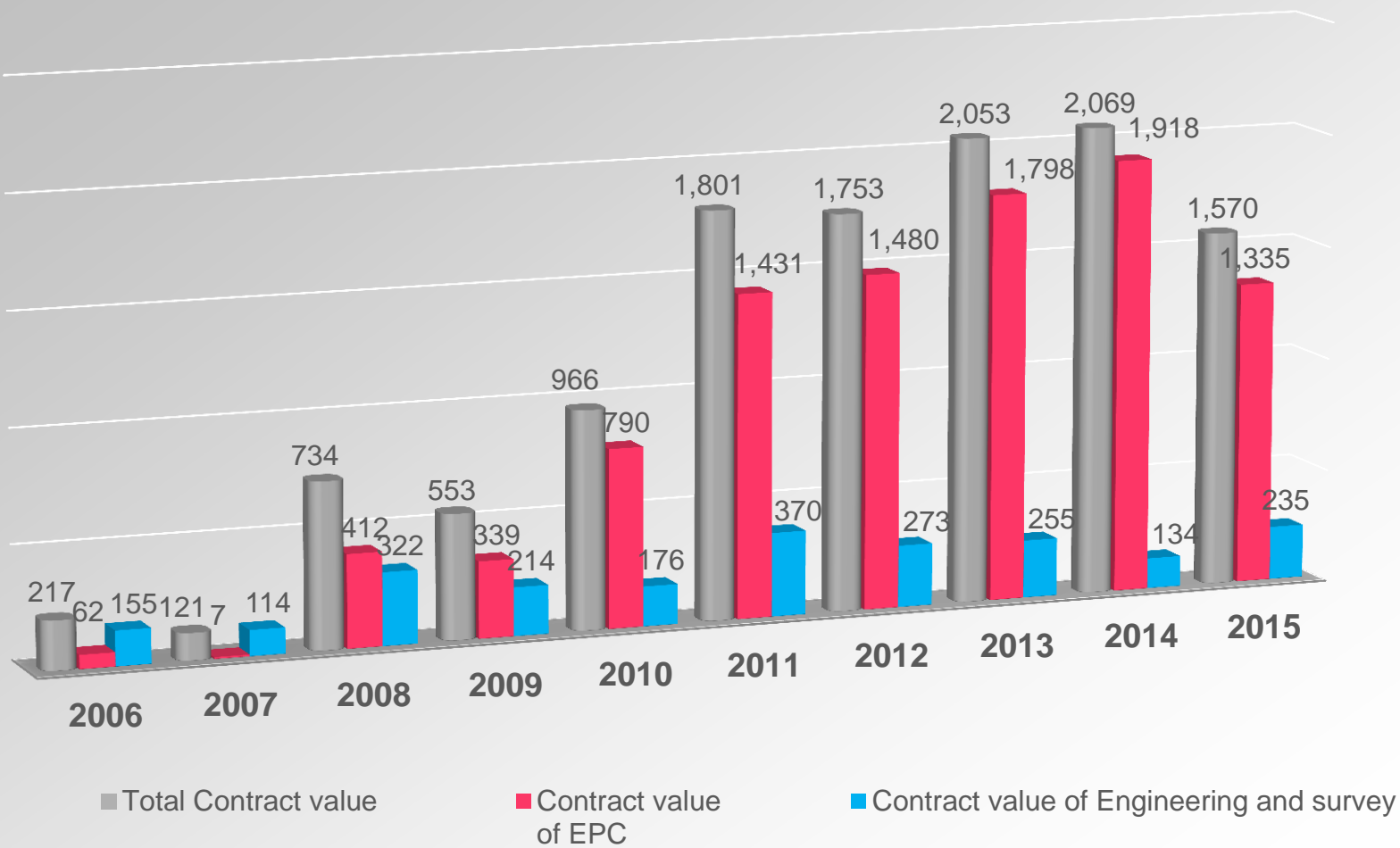
Infrastructure
(Jetty, Seawater
Desalination, Water
Treatment, Road &
Tunnel)



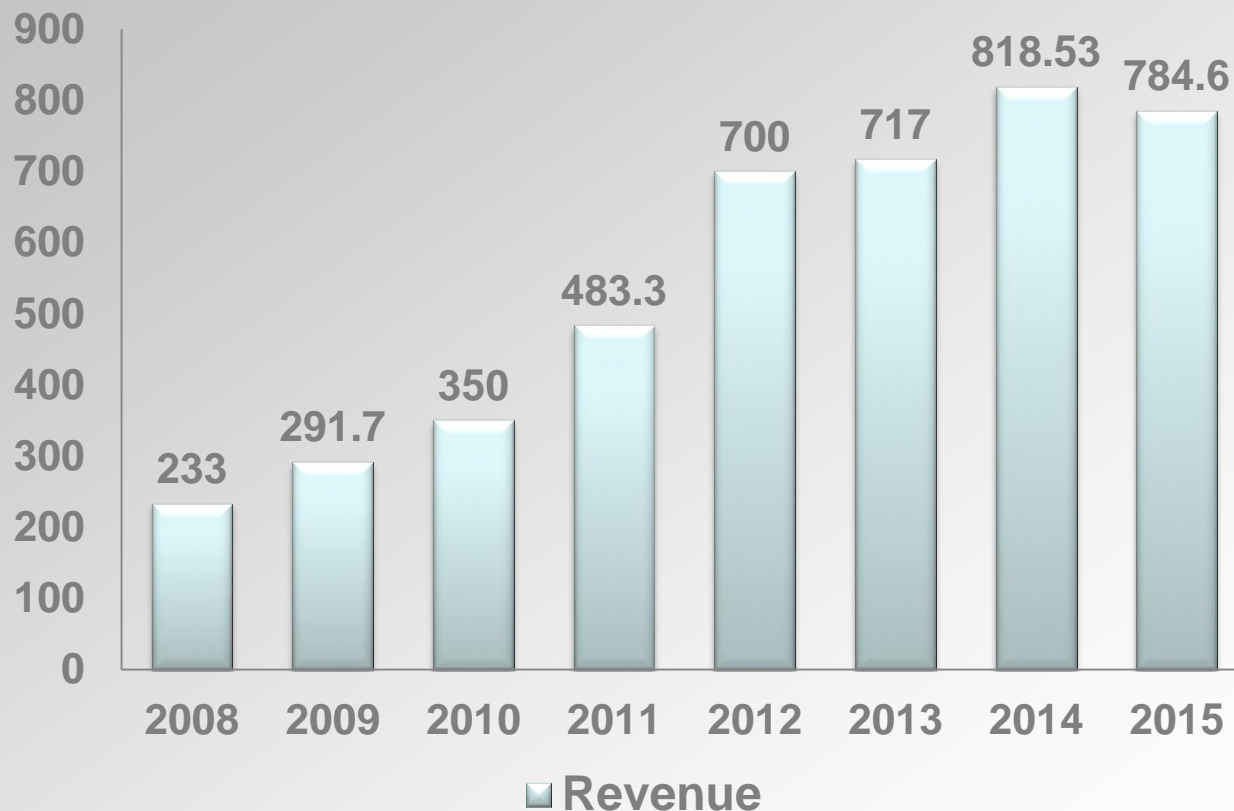
IT, Communication
and Automation



Order Book (Million USD)



Revenue in recent Six Years (Million USD)



Leader in China Power Market

77

Top 80 Chinese Contractors
(All industries)

GEDI ranks No.77 of the Top 80 Chinese Contractors of all industries by ENR in 2015

6

Top 80 Chinese Contractors
(Power industry)

GEDI ranks No.6 of the TOP 80 Chinese Contractors of power industry by ENR in 2015

23

Top 60 Chinese Design Firms
(All industries)

GEDI ranks No.23 of Top 60 Chinese Design Firms of all industries by ENR in 2015

2

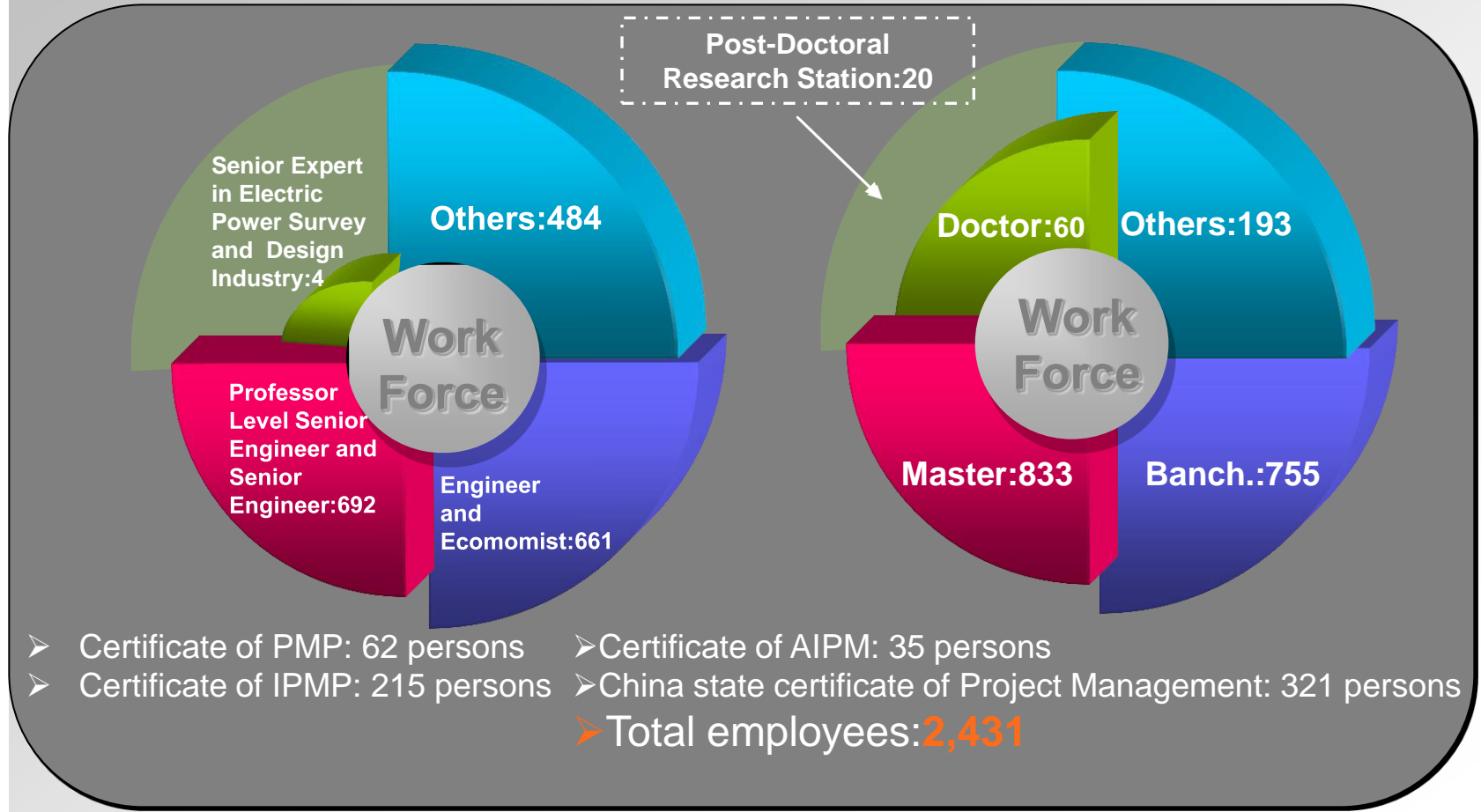
Top 60 Chinese Design Firms
(Electric power field)

GEDI ranks No.2 of Top 60 Chinese Design Firms of power industry by ENR in 2015



Work Force

- Sufficient Manpower and Talents



Overseas Offices



- | | | | | | | | | | | | |
|--------------|---|---------------|---|-----------|---|---------------------|---|-----------|---|---------|---|
| Philippines | ● | Pakistan | ● | Turkey | ● | Bangladesh | ● | Indonesia | ● | Vietnam | ● |
| South Africa | ● | South America | ● | Hong Kong | ● | Egypt & Middle East | ● | Russia | ● | Myanmar | ● |



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Overseas Projects



- Africa**
- ☉ Equatorial Guinea Mbini Gas Power Plant Project
 - ☉ Congo 35-110kV Power Grid Project
 - ☉ Congo Bouenza Project
 - ☉ Ethiopia GIBE III- ADDIS ABAB 400kV Project
 - ☉ Tanzania Natural Gas Processing Plant Project
 - ☉ Angola SK Project
 - ☉ South Sudan Malakal-Bor Project
 - ☉ Madagascar Surara Iron Ore Auxiliary Power Plant

- Bangladesh**
- ☉ Dhaka IV Transmission and Substation Project
 - ☉ Meghnaghat Combined Cycle Power Plant Project
 - ☉ Bibiyana Gas Turbine Power Plant Project
 - Shahjibazar Combined Cycle Power Plant Project

- Iran**
- ☉ The North Pars 2000MW GTCC Power Plant Project
 - ☉ The North Pars Diesel Captive Power Plant Project

- India**
- ☉ Tuticorin 2×600MW Thermal Power Plant Project
 - ☉ Warora 2×300MW Thermal Power Plant Project
 - ☉ Buitibori 2×300MW Thermal Power Plant Project
 - ☉ Rose I II 4×300MW Thermal Power Plant Project
 - ☉ Moserbaer 2×660MW Coal Fired Power Plant Project

- Indonesia**
- ☉ BANTEN 1×670MW Supercritical Coal-Fired Power Plant Project
 - ☉ Hanking BMS Industrial Park 2x135MW Captive Power Plant

- Pakistan**
- ☉ HUBCO 2×660MW Coal-fired Units Project

- North Korea**
- ☉ Pyongyang 2×300MW Coal Fired Power Plant Project

- Laos**
- ☉ The Laos National Power Grid Project
 - ☉ The Mekong Regional Power Grid Project

- Turkey**
- Turkey KONYA ILGIN 1×500MW CFB Supercritical Coal Fired

- Bosnia**
- Tuzla Unit7 CFPP 1×450MW

- Vietnam**
- Vietnam Vung Ang I 2×600MW Power Plant Project
 - Duyen Hai I 2×622MW Coal Fired Power Plant Project
 - Vinh Tan I 2×600MW Coal Fired I Power Plant Project
 - Thai Binh II 2×600MW Coal Fired Power Plant Project
 - ☉ Mao Khe 2x220 MW Coal Fired Power Plant Project

- EPC/EP
- ☉ Engineering & Consultancy

Core Competitiveness



- ◆ Financing
- ◆ EPC Management
- ◆ QC/QA & HSE
- ◆ Technology Innovation



Financing

Key Financing Institutions & Government

- Financing Institutions



ICBC

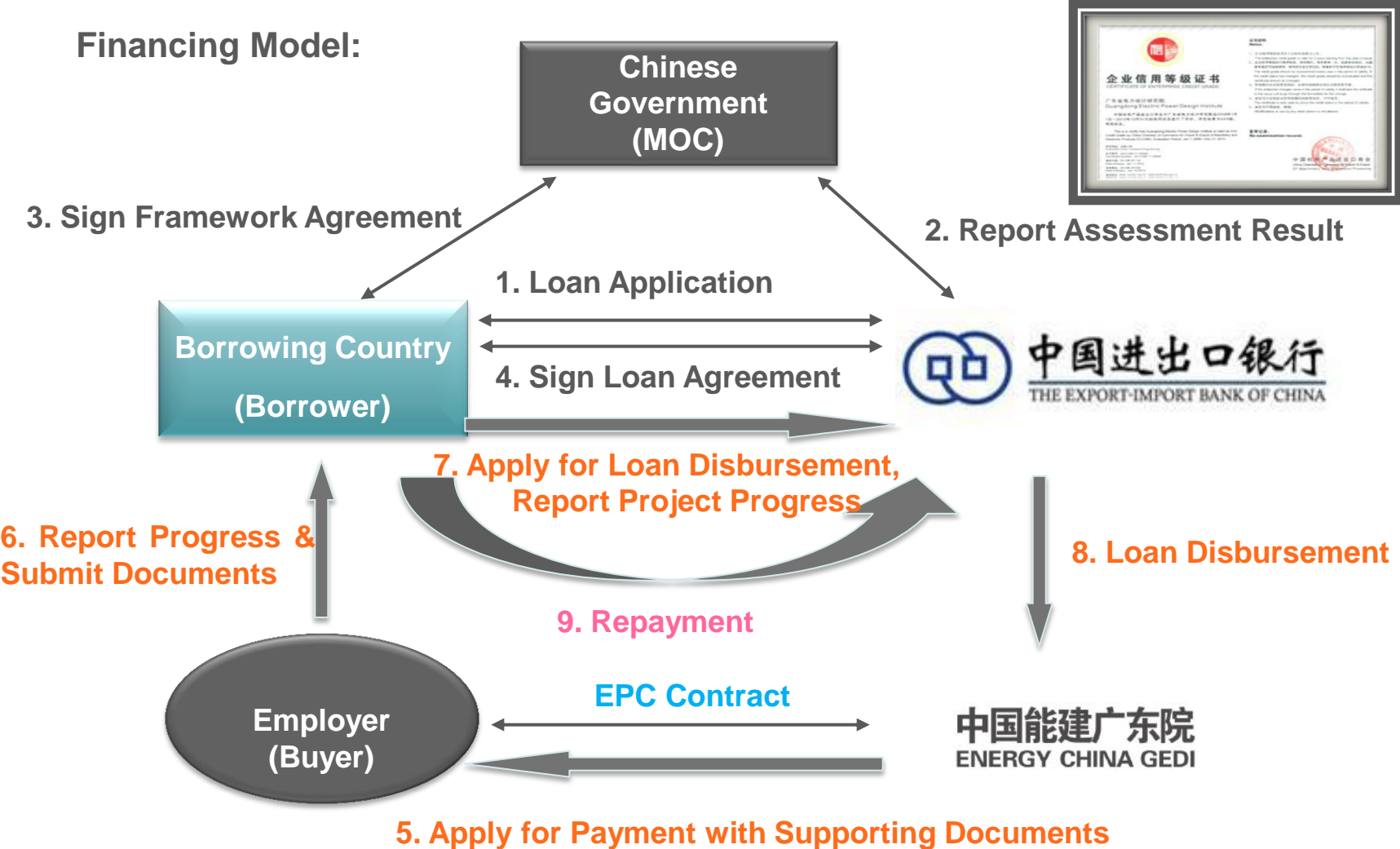


国家开发银行
THE STATE DEVELOPMENT BANK OF CHINA



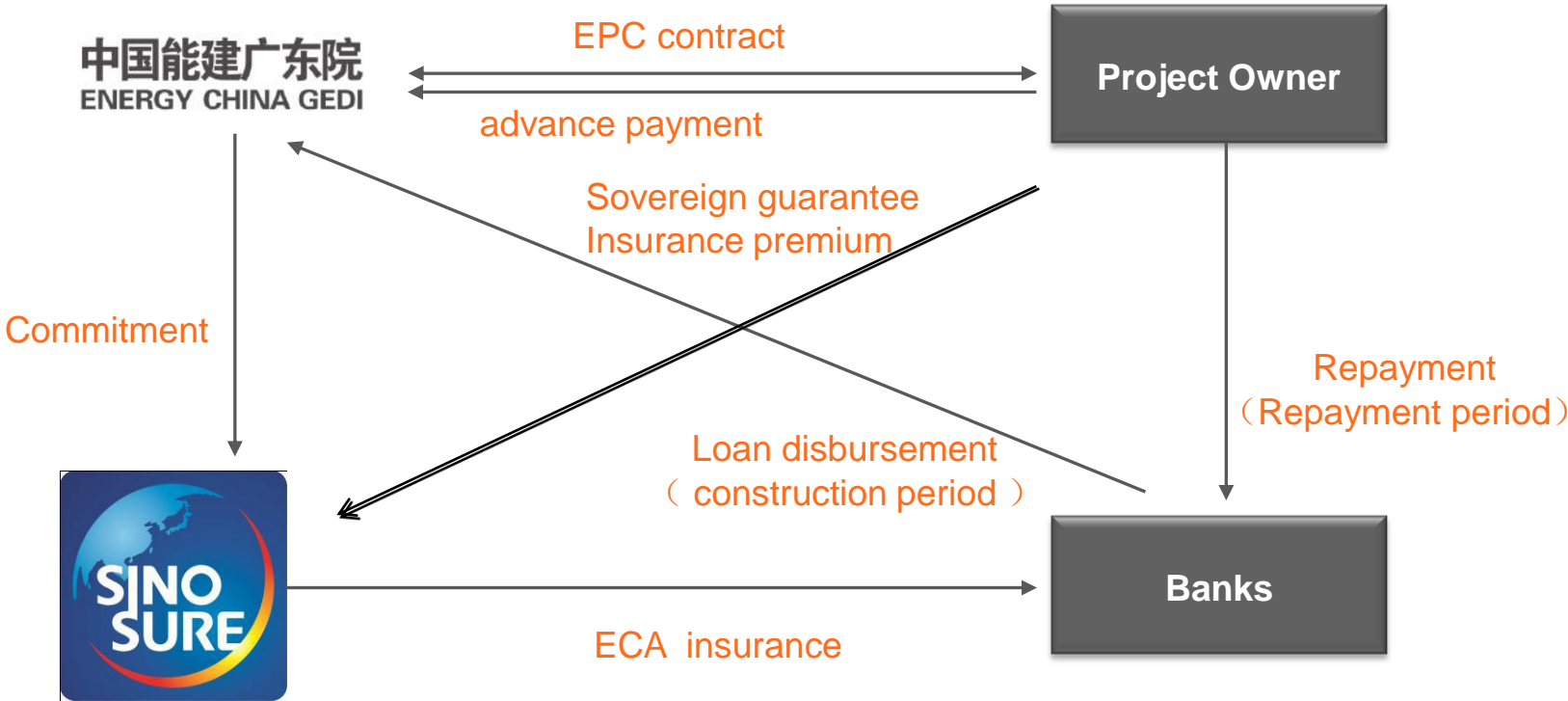
Chinese Government Concessional Loan

Financing Model:



Export Buyer's Credit

Financing Model:



A graphic illustration for project management. The top half features a world map with two large red circular nodes connected by a network of lines and smaller blue nodes. A white airplane is shown flying across the map. On the left, three grey arrows point right. The bottom half shows a city skyline with skyscrapers reflected on a glossy surface under a cloudy sky.

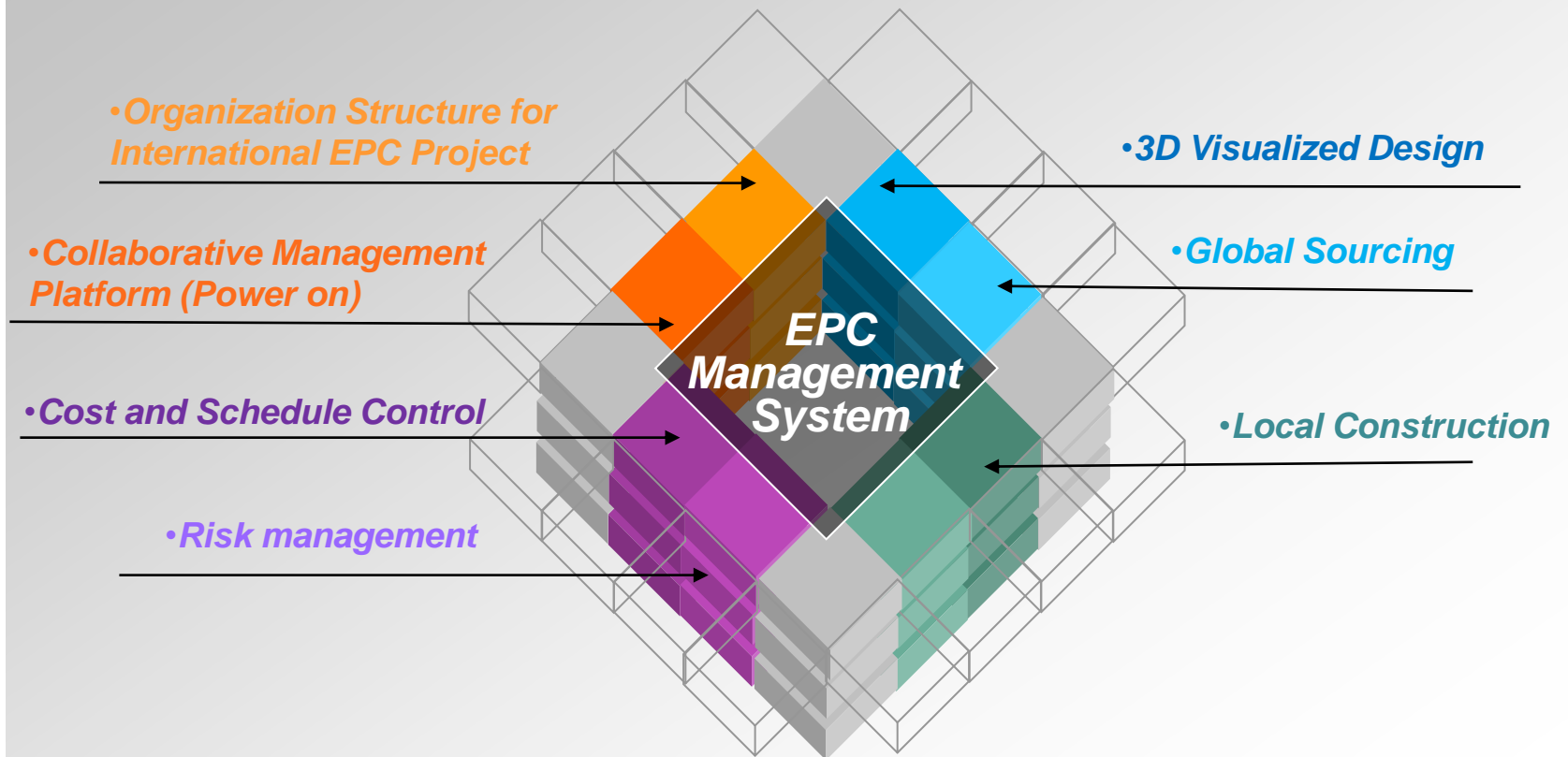
Project Management



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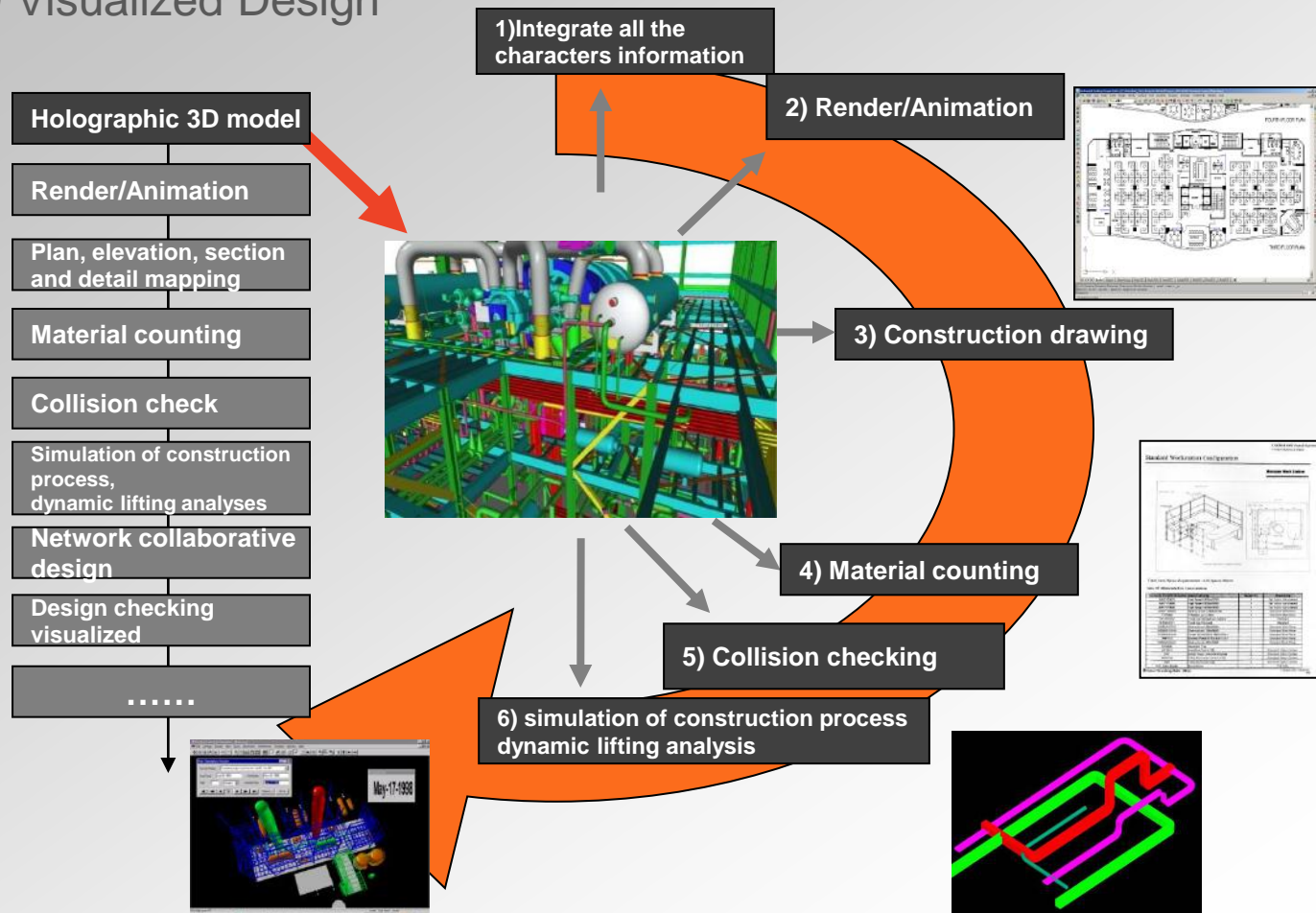
EPC Management

Integrated and systematic system including management procedures, documents, instructions and guidelines



EPC Management

- 3D Visualized Design



EPC Management

- Global Sourcing

Procurement team with rich experience and high efficiency

Strategic Cooperation Agreement with key equipment suppliers for exclusive support

Product

&Service

Long-term cooperative agreements with famous logistic companies local/worldwide

Established database for 3000+ pre-qualified local/international suppliers



EPC Management

- Local Construction

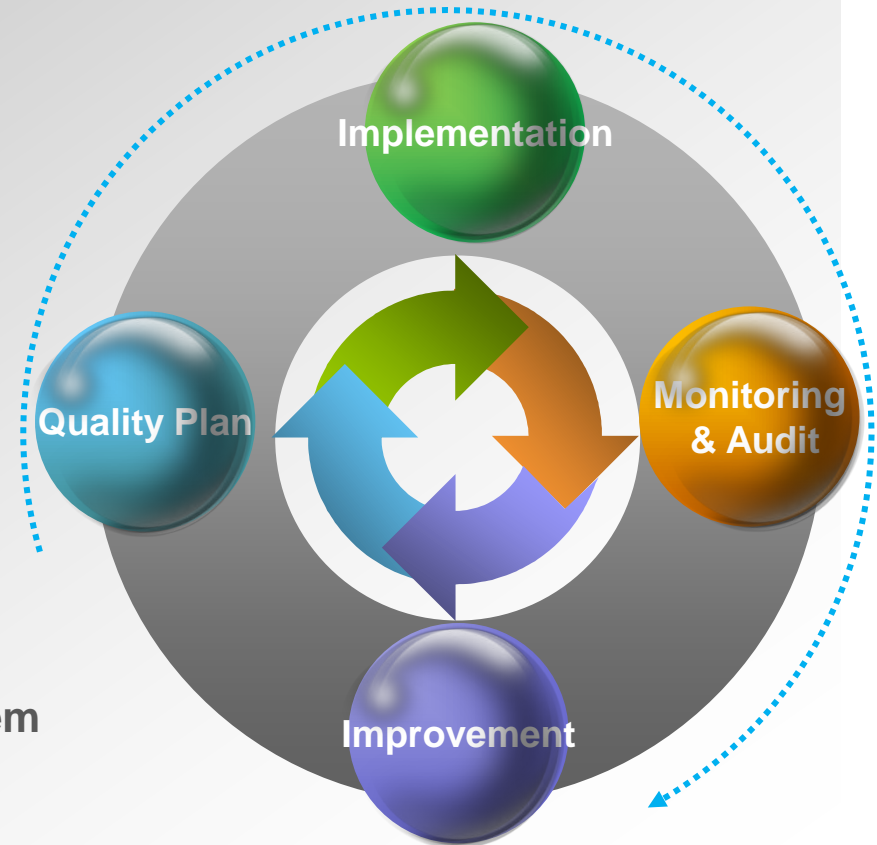
Well- experienced in-house Construction Management Team and over 800 staff subsidiary for construction supervision in power market

Long-term relationship with Chinese top level construction, erection, testing and commissioning subcontractors

Give priority to the usage of local sub-contractors and labor force

Quality Control & Assurance

CREATE VALUE FOR CUSTOMERS
FOCUS ON CUSTOMERS' NEEDS



- Technical Standard Control System
- Management Standard Control System
- Working Standard Control System

Health, Safety, Environment

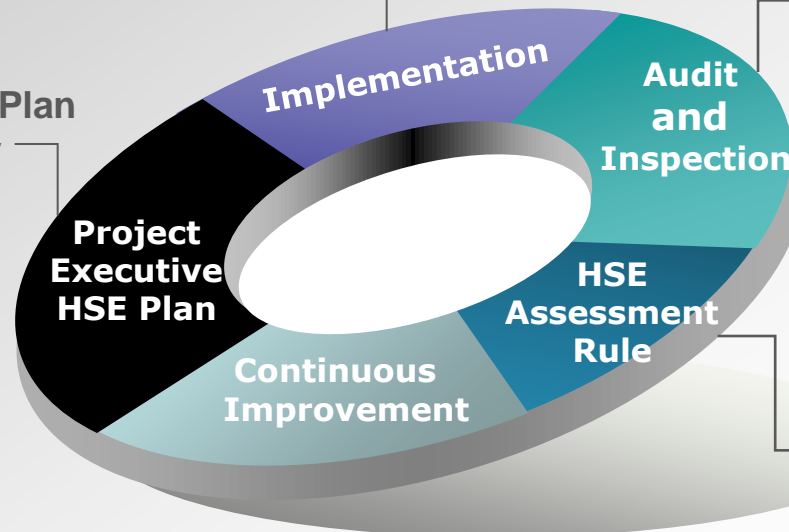
- Updated HSE Management System
- Annual HSE Management Objective issued by Top Management



Strict Implementation complying with PLAN

Regular or Irregular Audit and Inspection

Project Executive HSE Plan reviewed and approved by safety committee.



Strict HSE Assessment Rule related to each staff

Technology Innovation

Five Technology Centers

China-UK (Guangdong) CCUS
Industrial Promotion &
Academic Collaboration Center

Southern Sub-center of National
Electric Power Planning
Research Center

Guangdong Energy Consulting
& Planning Research Center

Guangdong Distributed Smart
Energy Research Center

Offshore Wind Power
Technology Center

Post-doctoral Research Station

Core Technologies

1000MW Ultra
Super-critical Coal-
fired Power Plant

1000MW
Nuclear Power
Station

1000MW Offshore
Wind Farm Planning

1000kV Power
Transmission

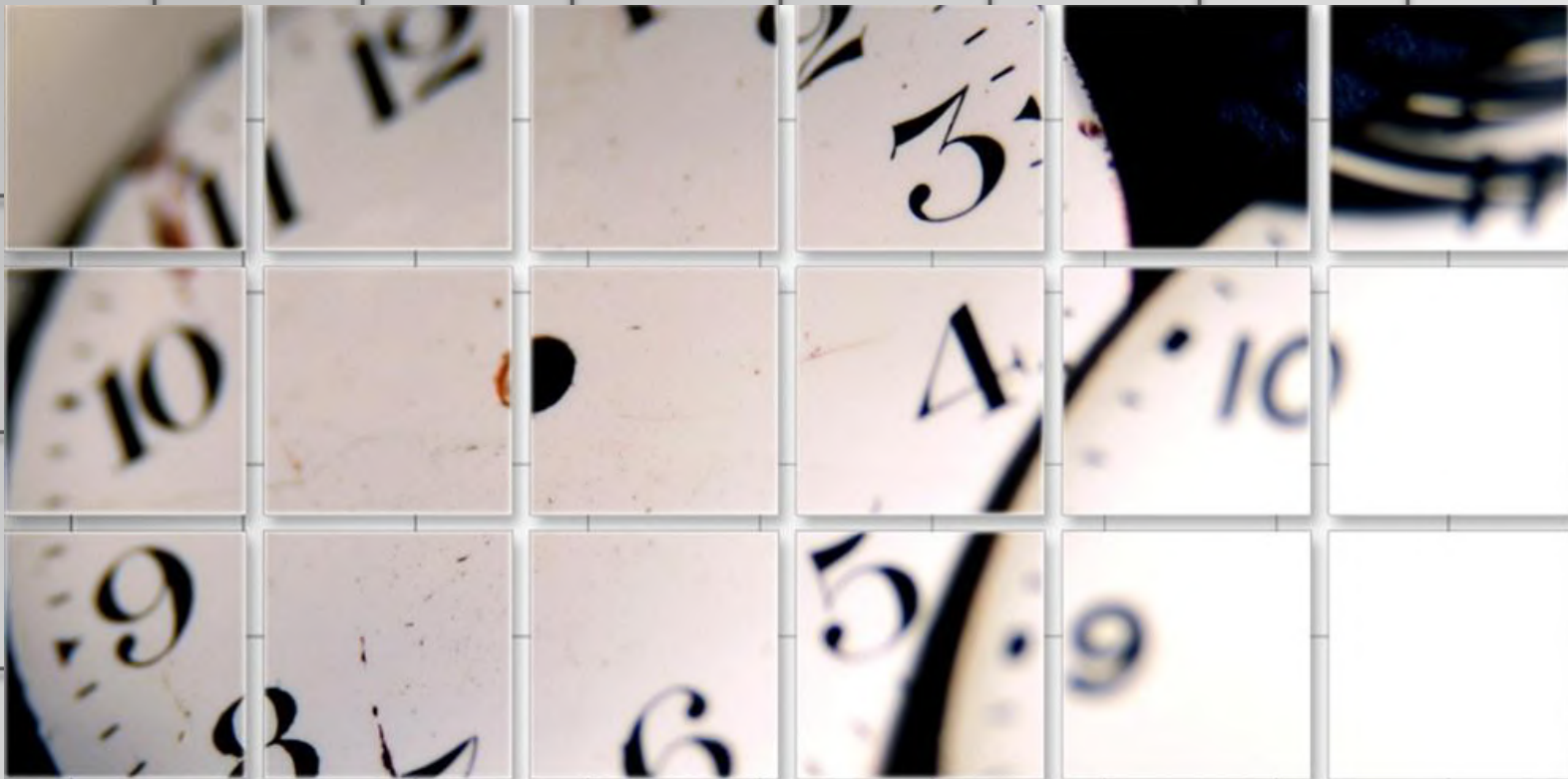


Social Responsibility

Be Local, Be Humble, Be Responsible.

GEDI establish a good social image by keep actively taking responsibilities. And we also commit to provide consultant services to enterprises and the government, etc.





Experiences



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ENERGY CHINA GEDI

Experiences— EPC Services

- ◆ Scope of Design: Power grid, Power plant, Network Telecommunication, Architecture, etc
- ◆ Mode of Contracting: EPC, EP, PM, PMC
- ◆ GEDI has undertaken EPC contracts with contract value of around 9.2 billion USD.

Power Generation **33**

- **1000MW~1750MW** Power Plants: **3 projects**
- **600MW~660MW** Power Plants: **6 projects**
- **300MW ~350MW** Power : **7 projects**
- Below **300MW** Power Plants: **6 projects**
- **Solar** Power Project: **11 projects**

FGD **6**

Power Transmission & Substation **19**

- **500kV** Transmission &Substation Project: **5 projects**
- **220kV** Transmission &Substation Project: **14 projects**

Architecture **18**

Experiences— Engineering Services

- Power Generation



Total capacity : exceeds **142,086MW**

Coal

- **1000MW** class Ultra Super Critical Plants: **45 units**
- **600MW~660MW** Power Plants: **65 units**
- **300MW** Power Plants(including CFB): **56 units**
- Below **300MW** Power Plants: **34units**

Nuclear

- **1750MW** class: **4units**
- **1000MW** class: **34units**

Oil /Gas

- ◆ **F class** gas turbine combined cycle : **40 units**
- ◆ **E class** gas turbine combined cycle : **6 units**

Renewable

- ◆ Biomass, Wind farm, Solar plant , Distribution, Garbage

Experiences— Engineering Services

- Transmission Experiences

- Total installed distance of **$\pm 1100\text{kV DC}$** Transmission project (**143km**) ;
- Total installed distance of **1000kV AC** Transmission project (**175km**) ;
- Total installed distance of **$\pm 800\text{kV DC}$** Transmission project (**771km**) ;
- Total installed distance of **$\pm 500\text{kV DC}$** Transmission project (**1,130 km**) ;
- Total installed distance of **500kV AC** Transmission project (**9,642km**) ;
- Total installed distance of **220kV** Transmission project (**8,335km**) ;
- Total installed distance of **110kV** Transmission project (**5,782km**) ;
- **220~500kV** large cross projects (submarine cables): 30.

- Substation Experiences

- One **$\pm 1100\text{kV DC}$** converting station (**12,000MW**);
- Four **$\pm 800\text{kV DC}$** converting station (**23,000MW**) ;
- Three **$\pm 500\text{kV DC}$** converting station (**12,600MW**) ;
- Total installed **500kV** Substation project (**86,250MVA**) ;
- Total installed **220kV** Substation project (**78,240 MVA**) ;
- Total installed **110kV** Substation project (**15,200MVA**)



Reference for Major Projects



Vinh Tan Phase 1 EPC Project

Capacity : $2 \times 600\text{MW}$

Customer: China Southern Power Grid International Company

Location : Vietnam

Period: 2015.06~Ongoing

Scope: EPC



Duyen Hai Phase I Thermal Power Plant Project

Capacity : $2 \times 622\text{MW}$

Customer: EVN

Location : Vietnam

Period: 2010.08~2015.12

Scope: Consortium partner of EPC



Shengxiong Industrial Park

Coal Gangu Integrated Utilization Captive Power Plant Phase I(CFB)

Capacity : 2×300 MW

Customer: Xinjiang Shengxiong Energy Development Co., Ltd

Location : Xinjiang, China

Period:2011.01~2013.07

Scope: EPC



Guangzhou Steel Captive Power Plant Project

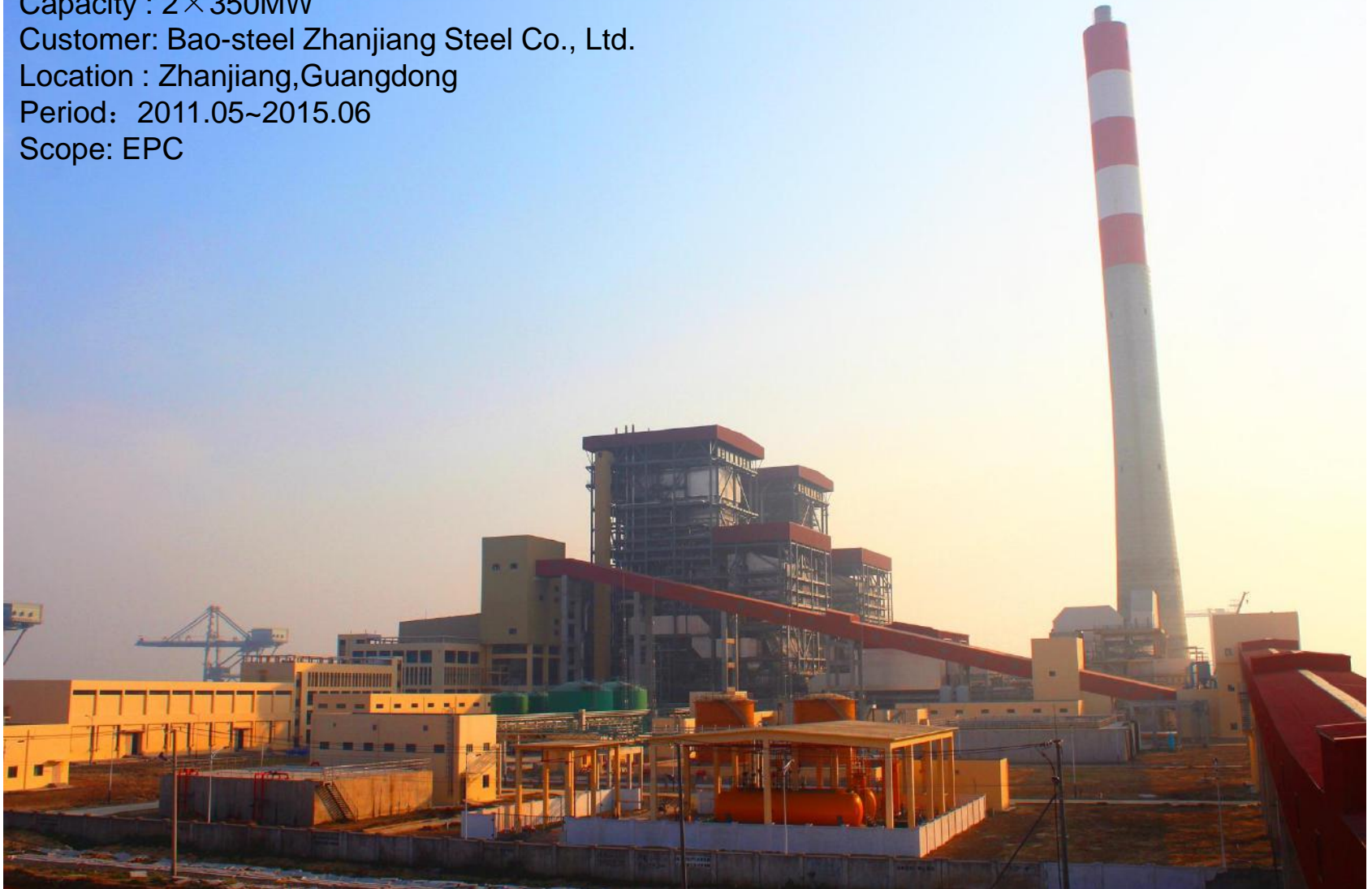
Capacity : $2 \times 350\text{MW}$

Customer: Bao-steel Zhanjiang Steel Co., Ltd.

Location : Zhanjiang, Guangdong

Period: 2011.05~2015.06

Scope: EPC



Datang Fuzhou Power Plant Project

Capacity : $2 \times 1000\text{MW}$

Customer: Datang International Power Generation Co., Ltd. and EDF

Location : Fuzhou, Jiangxi

Period: 2012.05~2016.01

Scope: EPC



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Seawater FGD Work of Vietnam Vung Ang Phase I Power Plant

Capacity: $2 \times 600\text{MW}$

Customer: LILAMA

Location : Vietnam

Period:2010.05~2015.05

Scope: EPC



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Dongguan LNG Gas Turbine Power Plant Expansion Project

Capacity: $2 \times 470\text{MW}$

Customer: China Power International New Energy Holding Ltd.

Location : Dongguan, Guangdong

Period:2013.10~2016.02

Scope: EPC



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ENERGY CHINA GEDI

Shahjibazar 300 MW \pm 20% Gas Based Combined Cycle Power Plant

Capacity: 330MW

Customer: BPDB

Location : Bangladesh

Period:2013.05~Ongoing

Scope: EPC



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Turkey KONYA ILGIN 1 × 500MW CFB Supercritical Coal Fired Power Plant

Capacity: 1 × 500MW

Customer: Ciner Group

Location: Turkey

Period: 2015.02~Ongoing

Scope: EPC



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Yudean South China University of Technology Photovoltaic Power Generation Grid Power Station Project

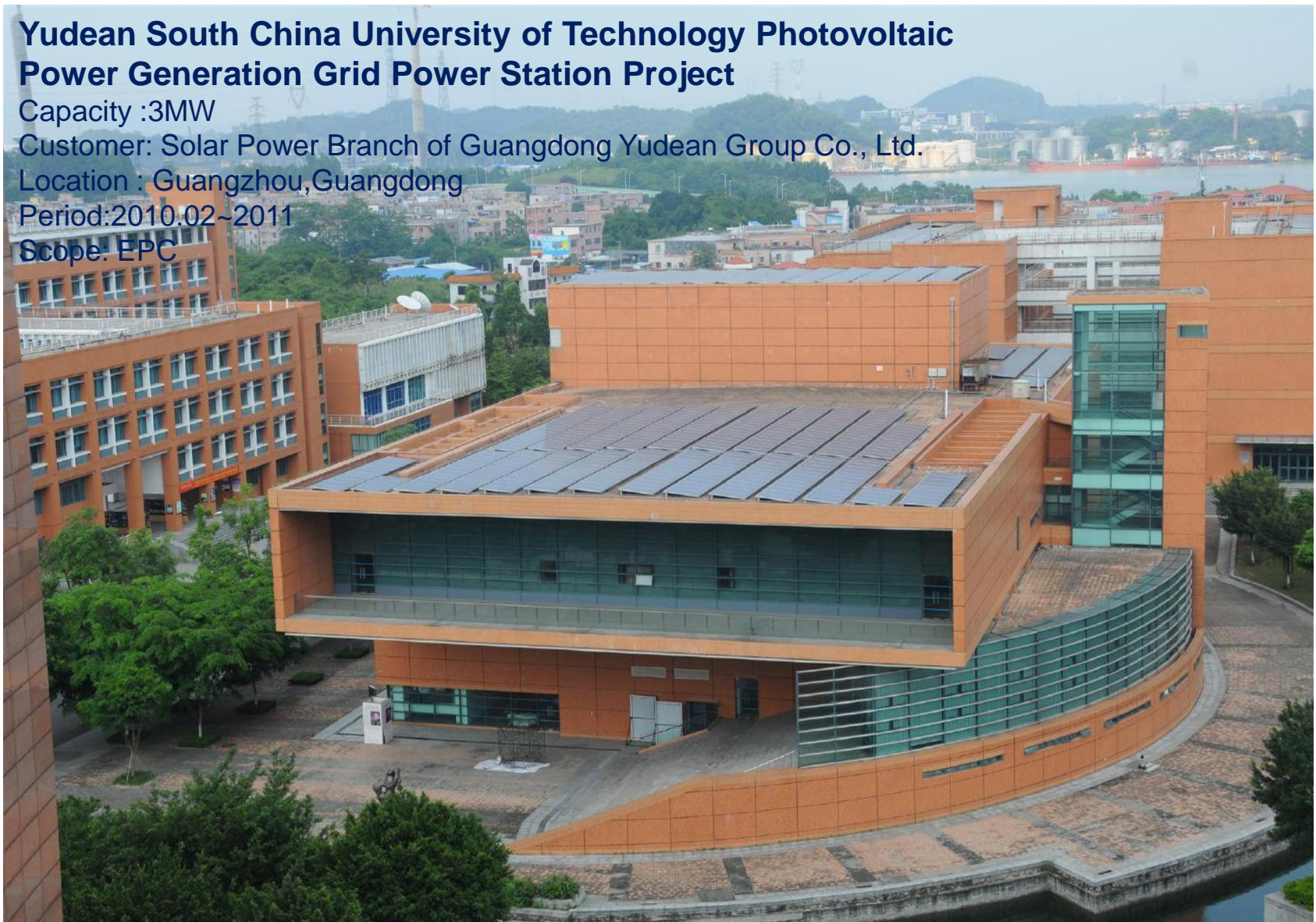
Capacity :3MW

Customer: Solar Power Branch of Guangdong Yudean Group Co., Ltd.

Location : Guangzhou,Guangdong

Period:2010.02~2011

Scope: EPC



Xinjiang Province Fenghua Jinghe Photovoltaic Power Generation Grid Power Station Project

Programming Capacity:200MWp

Current Capacity :20MWp

Customer: Fenghua Energy Investment Group Co., Ltd.

Location : Xinjiang Province, Jinghe District

Period:2013.04~2016.01

Scope: EPC



2013/10/27 12:24

National 863 Plan Distributed Energy Power Plant Project

Capacity : $3 \times 200\text{kW}$

Customer: Foshan Power Supply Bureau of Guangdong Power Grid Corporation

Location : Foshan, Guangdong

Period: 2009.02~2011

Scope: EPC



220kV Rulin Transmission and Substation Project

Capacity : $2 \times 240\text{MVA} + 220\text{kV}/7.4\text{km}$, $110\text{kV}/5.18\text{km} + \text{fibre communication}/12.01\text{km}$

Customer:Guangzhou Power Supply Bureau

Location :Guangzhou,China

Period:2009.12~2012

Scope: EPC





Dinghe Building

Total Investment: 1.5 billion CNY

Customer: Dinghe Insurance

Location : Shenzhen, Guangdong

Period: 2011.06~On going

Scope: EPC



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China Southern Power Grid Head-office Project

Total Area: 360,000m²

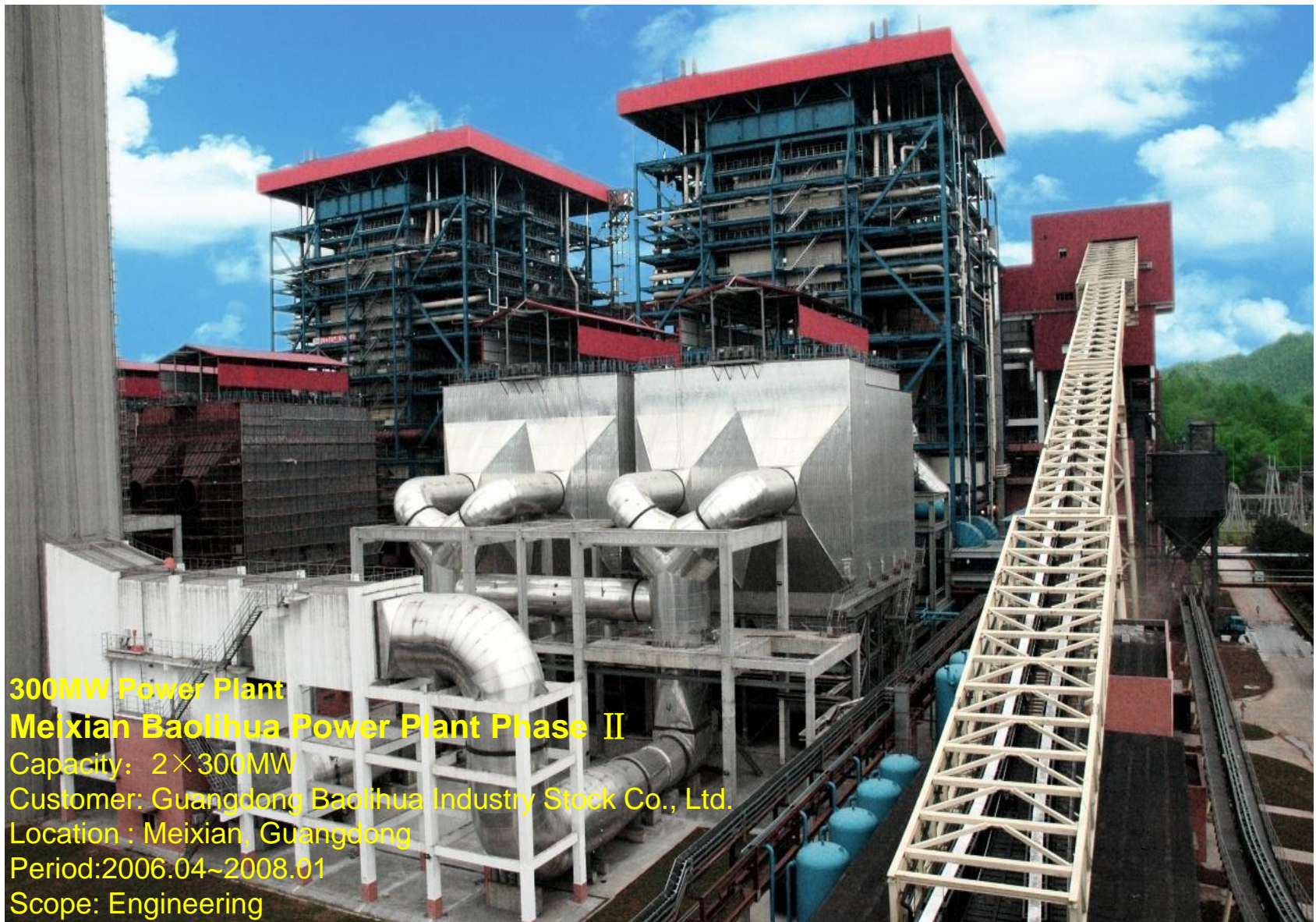
Customer: Guang Dong Power Grid

Location : Guangzhou, China

Period: 2013~On going

Scope: EPC





300MW Power Plant

Meixian Baoli Hua Power Plant Phase II

Capacity: $2 \times 300\text{MW}$

Customer: Guangdong Baoli Hua Industry Stock Co., Ltd.

Location: Meixian, Guangdong

Period: 2006.04~2008.01

Scope: Engineering



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600MW Power Plant Taishan Power Station

Capacity: $5 \times 600\text{MW} + 2 \times 1000\text{MW}$

Customer: Guohua Yudean Taishan Power Co.,Ltd.

Location : Taishan,China

Period:2002.09~2005.06

Scope: Engineering



1000MW Power Plant Huaneng Haimen Phase I Power Plant Project

Capacity: $4 \times 1000\text{MW}$

Customer: Huaneng Power International, Inc.

Location : Haimen, China

Period:2006.08~2009.10

Scope: Engineering



FGD Project

FGD Work of Shanwei Power Plant

Capacity: 2×660MW

Customer: Guangdong Red Sea Bay Power Generation Co.,Ltd,

Location : Shanwei, China

Period:2009.06~2011

Scope: EPC



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Ethiopia GIBE III- ADDIS ABABA Transmission and Substation Project

Capacity: 400kV

Customer: Shanghai Electric Power Group

Location : Ethiopia

Period:2010.12~2014.05

Scope: Engineering



Renewable Energy Project

Offshore wind farm planning of Guangdong Province

Capacity: 10GW

Customer: Development and Reform Commission of Guangdong Province

Location : Guangdong Offshore,China

Scope: Engineering



Renewable Energy Project

Kaidi Biomass Power Stations

Capacity: 30MW~50MW (20 units)

Customer: Wuhan Kaidi Electric Power

Location : Hubei, Hunan, Sichuan, Guangxi, Anhui, Jiangxi and Shanxi Provinces, China

Period:2010~2013

Scope: Engineering



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THANK YOU!

