

# CHINA CSP SUPPLY CHAIN

# CSNP

中国船舶重工集团新能源有限责任公司

China Shipbuilding New Power Co., Ltd.



中船重工

CSNP

中船新能

# China Shipbuilding Industry Corporation (CSIC)



2017

Rank at **233** of Fortune Global 500  
World's **largest** shipbuilding group



Total asset base

USD **63 billion**

## Navy Equipment



## Merchant Ships



## Non-Marine Industry



Equipment  
Manufacture



Traffic &  
Transportation



New Energy  
New Material





# Solutions – Equipment's - Services



**R&D**



**EPC Contracting**



**Equipment Supply**



**Engineering Services**



**Capital  
Operation**



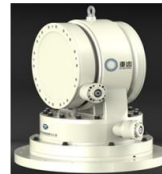
**O&M**



Steam Turbine



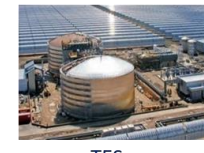
Boiler



Decelerator



Thermal Oil



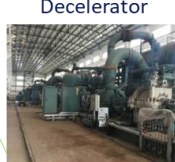
TES



Heat Exchanger



ORC



Waste Heat Recovery



CCHP Supply



Combined Cycle  
Heat Recovery Boiler



Condenser



Special Pump  
Casing



Special Metal Valve



Steam Driven  
Compression  
Heat Pump



Thermal Insulation  
Material

# CSP power plants China



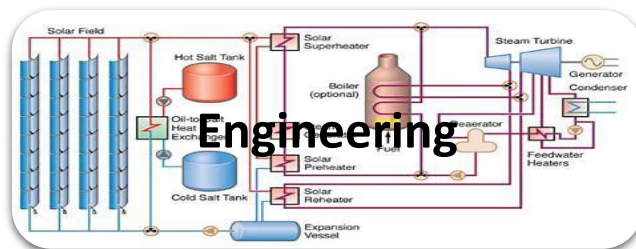
Situation	Project
Finishing Commissioning	CGN Delingha 50 Mwe, PTC
Expected completed end 2018	Luneng 50 Mwe ST
	Dunhuang 100 MWe, ST
	Delingha 50 Mwe, ST
	Xinneng 50 Mwe ST-Beam Down
	Akesai 50 Mwe PTC
Expected completed June 2019 or end of 2019	Hami 50 Mwe ST
	Dunhuang 50 MW ST
	Urat 100 Mwe PTC
Expected completed end 2019	Yumen 50 Mwe PTC X 2
	Shangyi 50 MW ST
	Chabei 64 Mwe PTC
	Zhangjiakou 50 Mwe CLFR
	Jinta 100 Mwe ST
	Gulang 100 Mwe PTC
	Hami 50 Mwe ST



# CSP Supply Chain, China, Actual Situation

- There are several products actually manufactured for CSP market in China.
- Several of them belongs to supply chain of system integration.
- Interest in local industry in develop products not manufactured yet in China or invest in CSP industry.
- CSP expect a global solution to decrease cost and consequently LCOE, like other conventional and renewable technologies.

# CSP Supply Chain, China, Actual Situation



Parabolic Trough Collector

Solar Tower

Basic Engineering

Detail Engineering

Metallic Structure

Tracking System

Mirrors

Receiver Tubes

Insulation

HTF

Foreign

Foreign - China

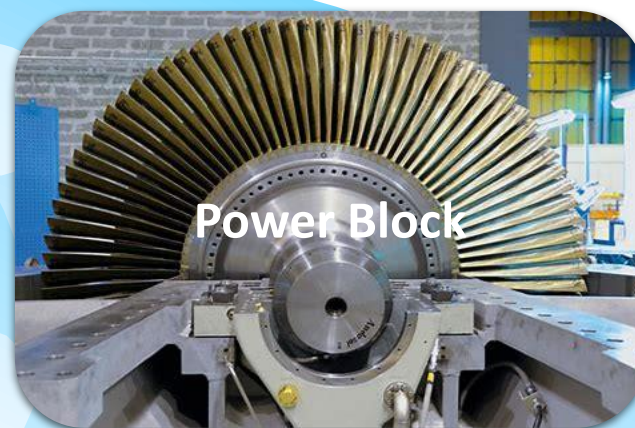
China



# CSP Supply Chain, China, Actual Situation

Parabolic Trough Collector

Solar Tower



Molten Salts

Heat Exchangers

Molten Salts Tanks

Insulation

Valves

Steam Turbine

Cooling System

Control System

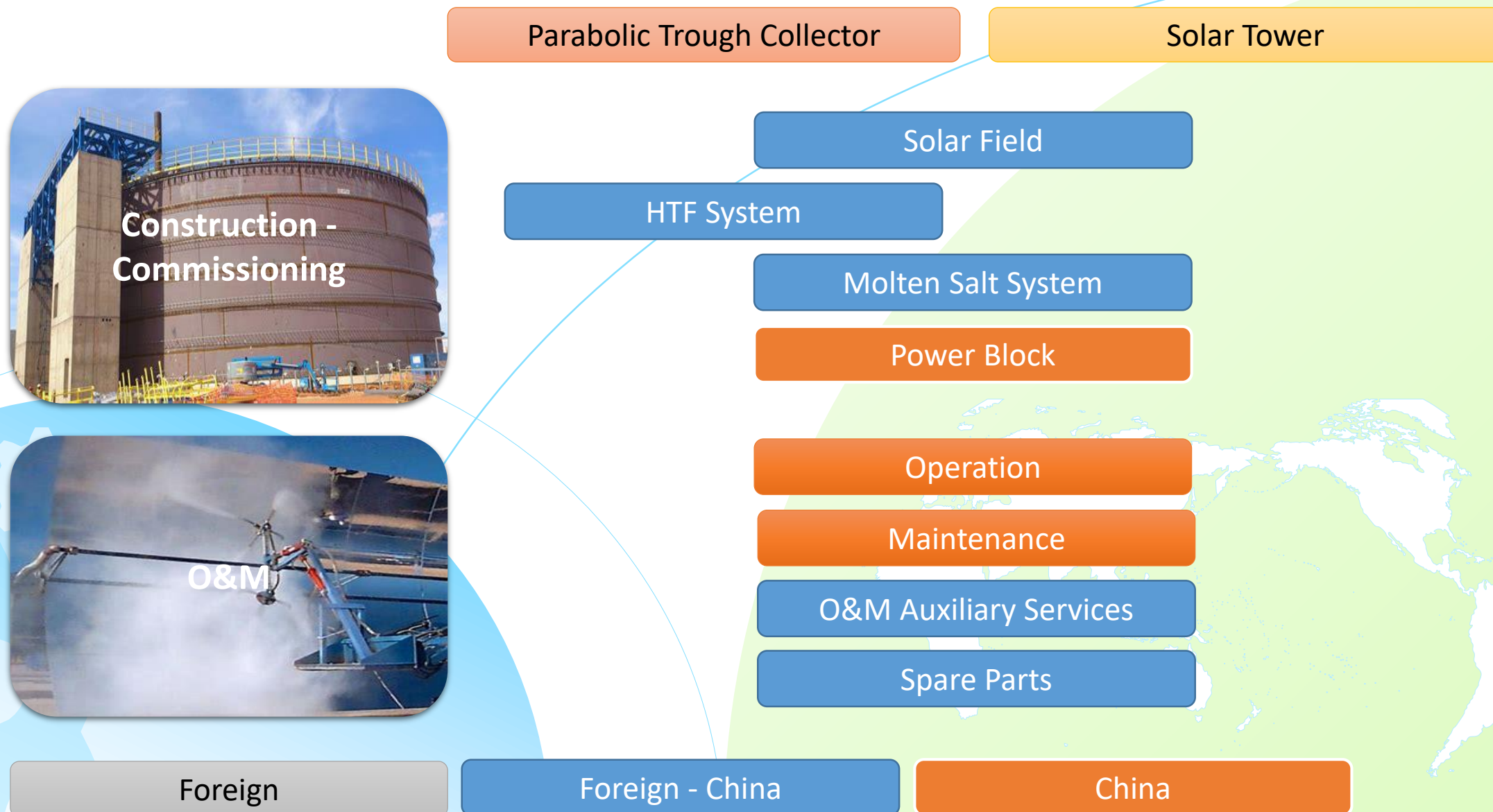
Foreign

Foreign - China

China



# CSP Supply Chain, China, Actual Situation

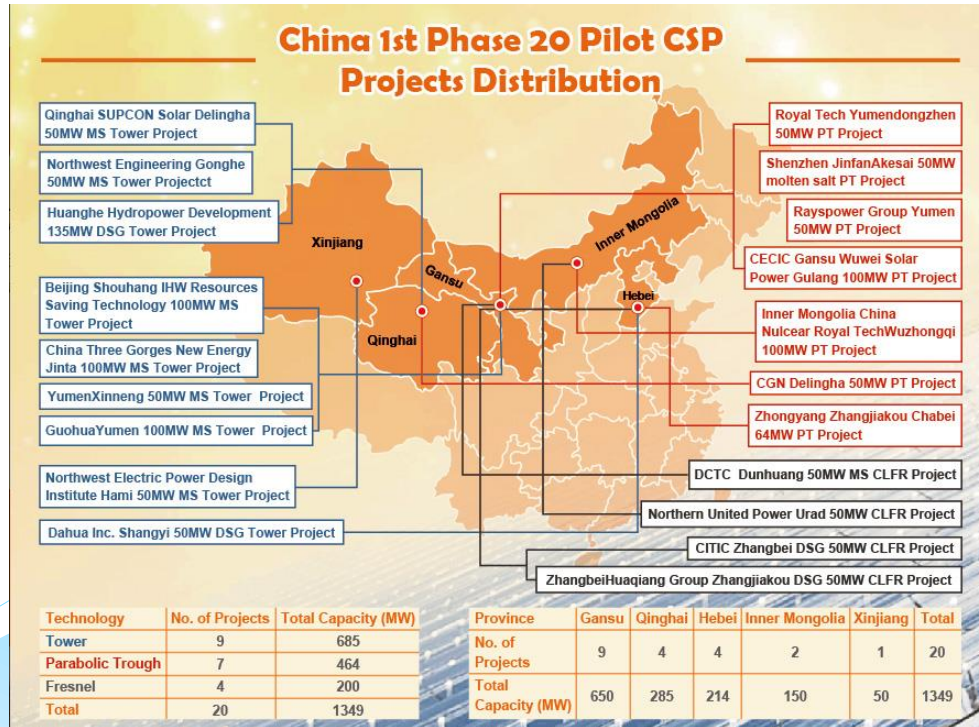


# CSP Supply Chain, Development



- China CSP actual manufacture capacity is demonstrated.
- Necessary experience and knowledge cooperation to get world quality desired.
- Carry out product integration to offer a product solution.
- Learning Curve EPC.
- Development own products, CSP need technical evolution.
- **Key: Fluent Coordination, Win – Win Global Business Solution**

# CSP - Industry



China: Industry



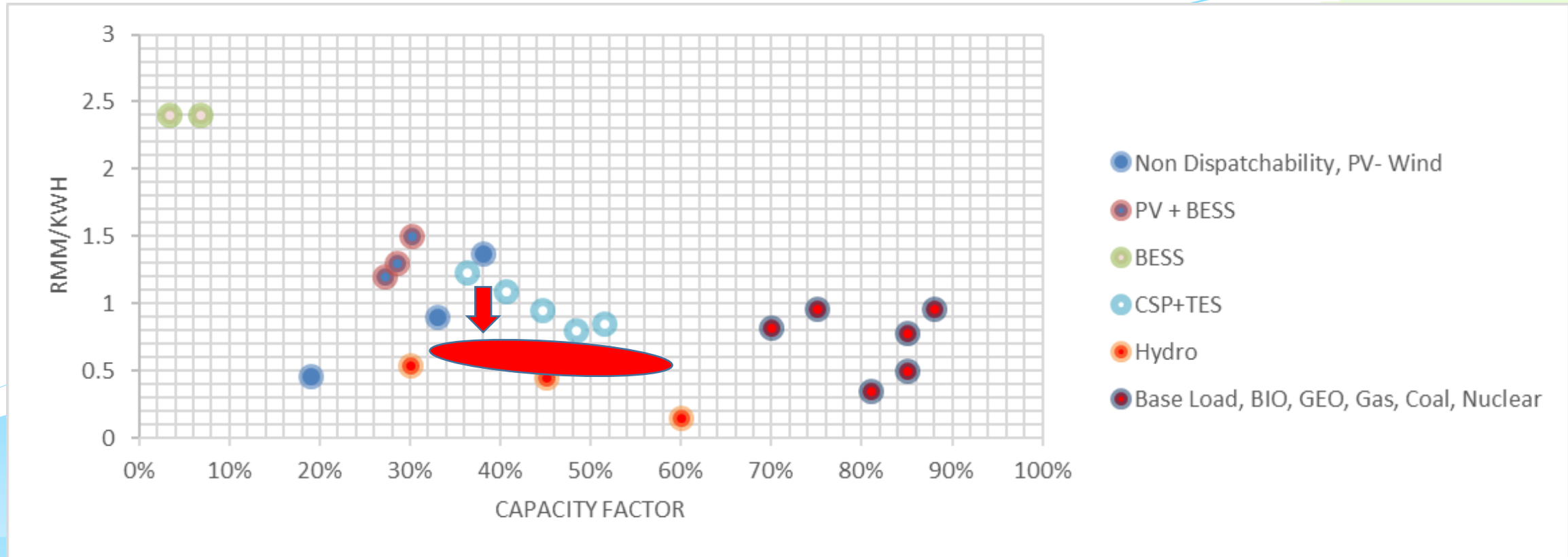
- Location of Industry is between China CSP market and overseas market.
- Being possible to supply local market and foreign market.



# CSP Supply Chain, LCOE Analysis

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# CSP Supply Chain, LCOE Analysis



- If LCOE decrease a bit, nowadays close to achieve thanks to big scale Project, there are a solution to allow higher renewable energies non dispatchable.

# Collaborate for Innovation Cooperate for Mutual Benefits



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