

SUPCONSOLAR



May 6, 2020

SUPCON SOLAR CSP Practice

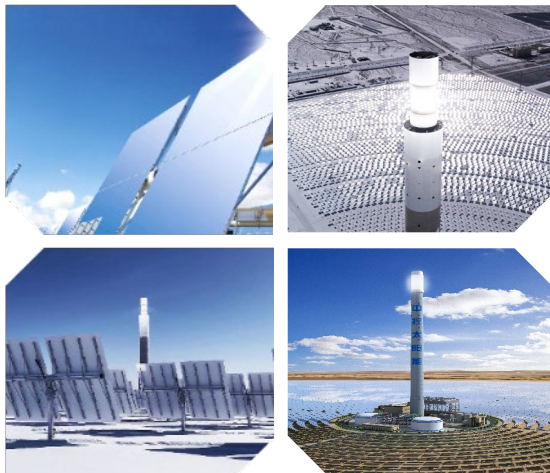
Jonny Liu

Director of Oversea Business Development

ZHEJIANG SUPCON SOLAR TECHNOLOGY CO.,LTD.

www.cosinsolar.com

CONTENTS



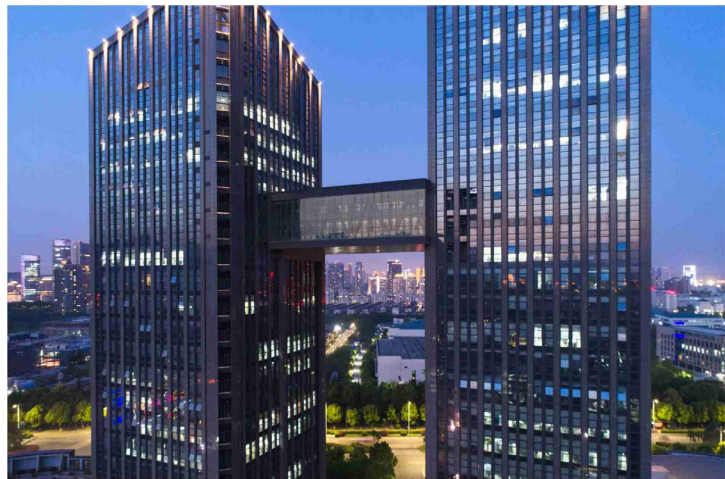
Part 01 ABOUT SUPCON SOLAR

Part 02 DESIGN & CONSTRUCTION

Part 03 O&M

01

ABOUT SUPCON SOLAR



Hangzhou, Zhejiang

ZHEJIANG SUPCON SOLAR TECHNOLOGY CO., LTD, is one of the earliest enterprises engaged in the research and industrialization of CSP technology.

- Dedicated to tower CSP technology by independent R&D.
- Technology provider, Equipment integration, Engineering.
- Develop, invest, construct, operate tower CSP plants.
- Initiate and contribute to Chinese and International CSP standards

2010

Found in

202

Patents

3

Successful References



● DELINGHA 10MW

- ✓ Developer, Technology & Core Equipments, EPC
- ✓ DSG : Jul, 2013
- ✓ Molten Salt : Aug, 2016

3+ Years Operation



● DELINGHA 50MW

- ✓ Developer, Technology & Core Equipments, EPC
- ✓ Started: April ,2017
- ✓ Synchronization: Dec, 2018

7 Months Commercial
Operation



● GONGHE 50MW

- ✓ Technology & Core Equipments
- ✓ Started: Nov,2017
- ✓ Synchronization: Sep, 2019

Performance Test



● MINOS 50MW

- ✓ Crete Island, Greece
- ✓ EPC consortium with CGGC
- ✓ Technology & core equipment

Financing Closing

Project Location	Delingha, Qinghai
DNI	1,948 kWh/m ² /year
Capacity	50MW
Storage Time	7 hours with molten salt
Occupied Land	247 ha
Tower Height	200m
Heliostats	542,700m ² (27,135 sets, 20m ² each)
Molten Salt Volume	10,093 tons
Steam Parameter	13.2 MPa, 540 °C
Electricity Production	146GWh/a



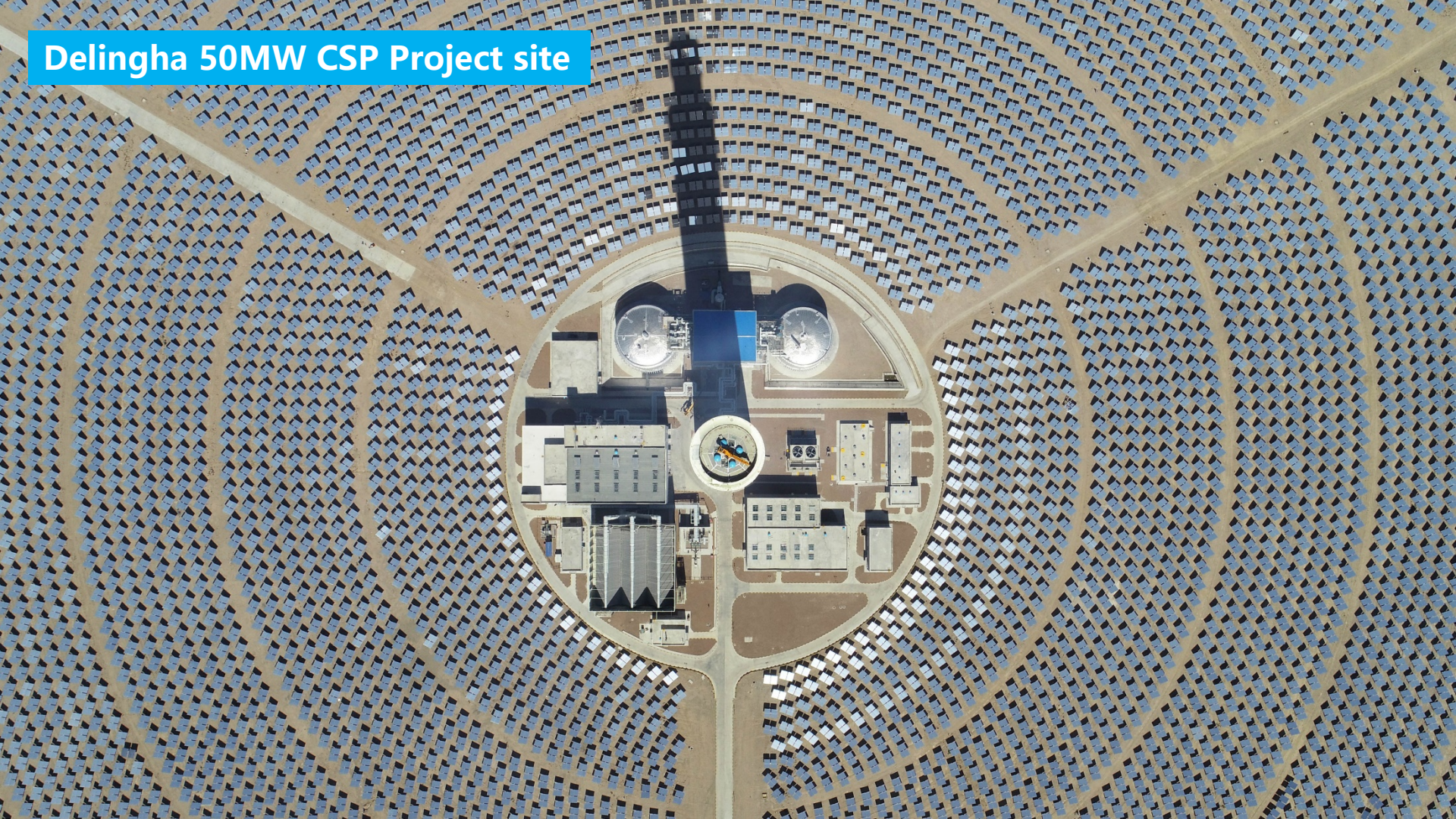
Delingha 50MW CSP Project site



Delingha 50MW CSP Project site



Delingha 50MW CSP Project site

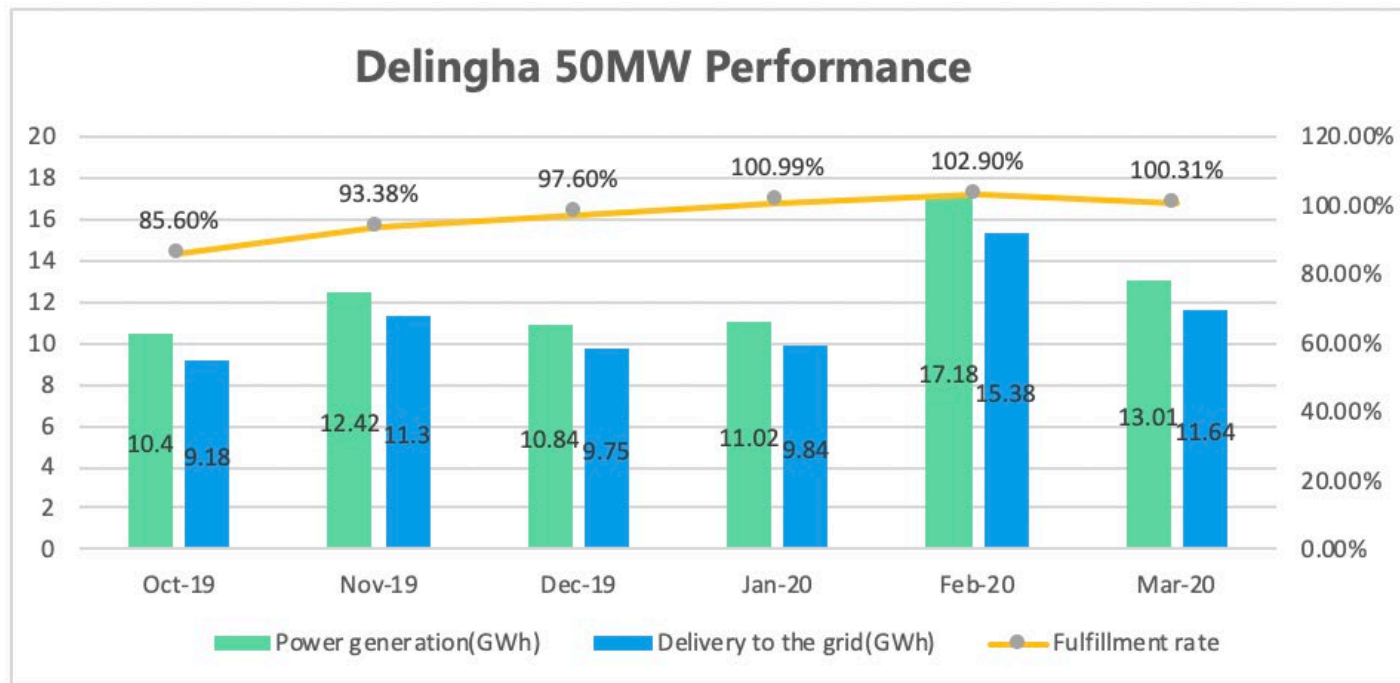




- 18 months construction period (3 months downtime due to low temperature from Dec 2017 to Feb 2018)
- A new record of construction speed for tower CSP project
- COD: Sep 2019

Indicators	Design Value	Operating Value
Capacity	50MW	52.1MW(max)
Minimum load	15MW(30%)	7.5MW(15%)
Thermal storage	7 hours	7.07 hours (Max)
Molten salt temp	565°C	566°C(Max)
Steam parameter	540°C/13.2Mpa	541°C/13.3Mpa (Max)
Solar-thermal conversion rate (design point)	52%	56.6%
Solar-electricity conversion rate (design point)	22%	24.2%

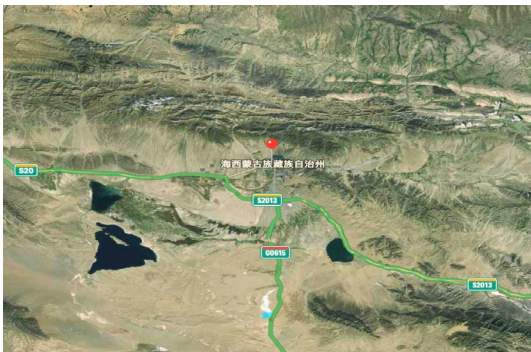
All the performance indexes reach or exceed the design value



- ✓ Average electricity production reaches to **97.06%** of the performance model
- ✓ The last 3 months: **100.99%**、**102.9%**、**100.31%**
- ✓ Expected to reach to **100%** in the 1st year after COD.

02

DESIGN & CONSTRUCTION



Quality, Durability, Profitability

Development and Feasibility Study:

- Site selection with good solar resource, geotechnical, hydrological and wind characteristics.
- Sufficient land with good topography
- Close to grid, consumer, transportation, water supply, etc.

Conceptual Design:

- SUPCON SOLAR CSP Design Platform, sizing the solar field, tower height, TES, Turbine, to reach optimum production and lowest LCOE

Basic and Detailed Design:

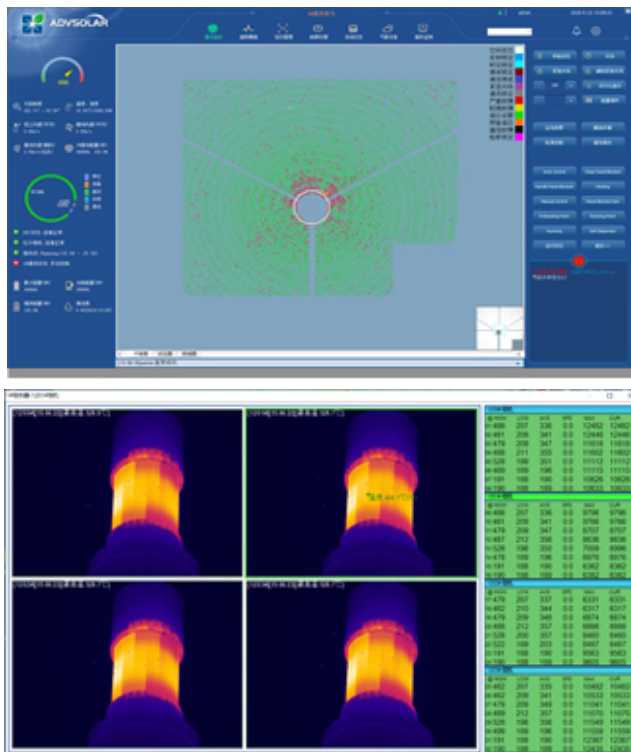
- Customized Heliostat and flexible structure of receiver
- Ceramisite-based composite insulation foundation of tanks
- Two parallel passes SGS
- Fault tolerance electric heat tracing

Construction

- Installation standards for all key equipment and pipes, especially those of salt tank, receiver, electric heat tracing, mobile devices, 347H pipes.

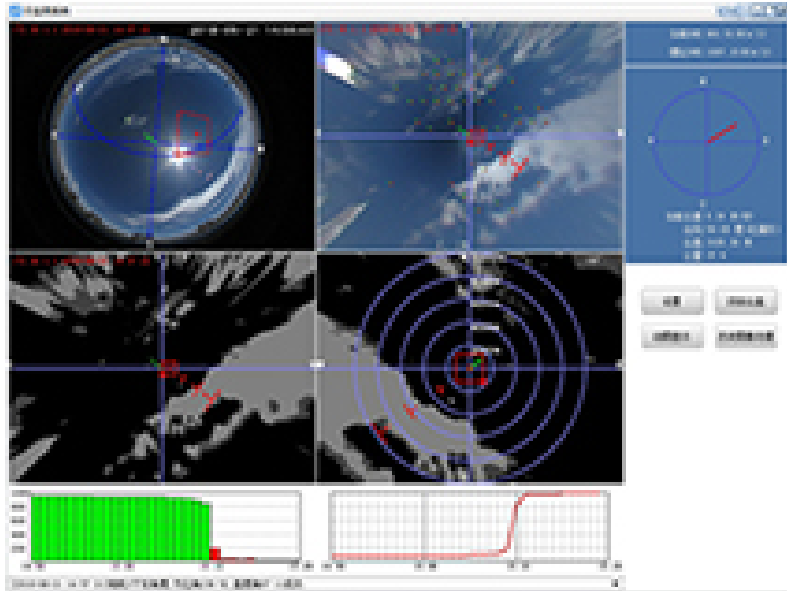
03

O&M Tools



Large-scale clustered heliostats field control system that enables fully automatic operation of the heliostat field;

- Machine vision technology based heliostat deviation detection and parameter fitness algorithm, the auto-calibration system that ensures high calibration efficiency and heliostat precision;
- The heliostat fault self-diagnosis system that significantly improves heliostat availability;
- The receiver surface temperature monitoring system, pipe blocking automatic identification system, and heliostat field energy dispatch system that increases solar resource utilization factor.



- Developed based on image processing and meteorological big data ;
- Energy flux density control of the receiver under cloudy conditions;
- Combined application of light spot optimization, simulating calculation and structuring improvement of the receiver;
- Curtail thermal shock of the receiver within design criteria.

3-3 AUTO-CLEANING VEHICLE

SUPCONSOLAR



SUPCON SOLAR has independently developed Unmanned Heliostat Cleaning Vehicle, which is able to navigate itself to clean the heliostat field on a regular basis so that human labor and operation costs can be saved.

SUPCONSOLAR

To provide low-cost, high-quality and clean energy!

ZHEJIANG SUPCON SOLAR TECHNOLOGY CO.,LTD.

Jonny Liu

Whatsapp:+86 135 8182 1132

liushaochao@cosinsolar.com

www.cosinsolar.com



Wechat
solarsupcon