

100MW solar thermal power plant (CSP) Kom Ombo, – Aswan



General description for 100 MW solar thermal power plant, Kom ombo – Aswan

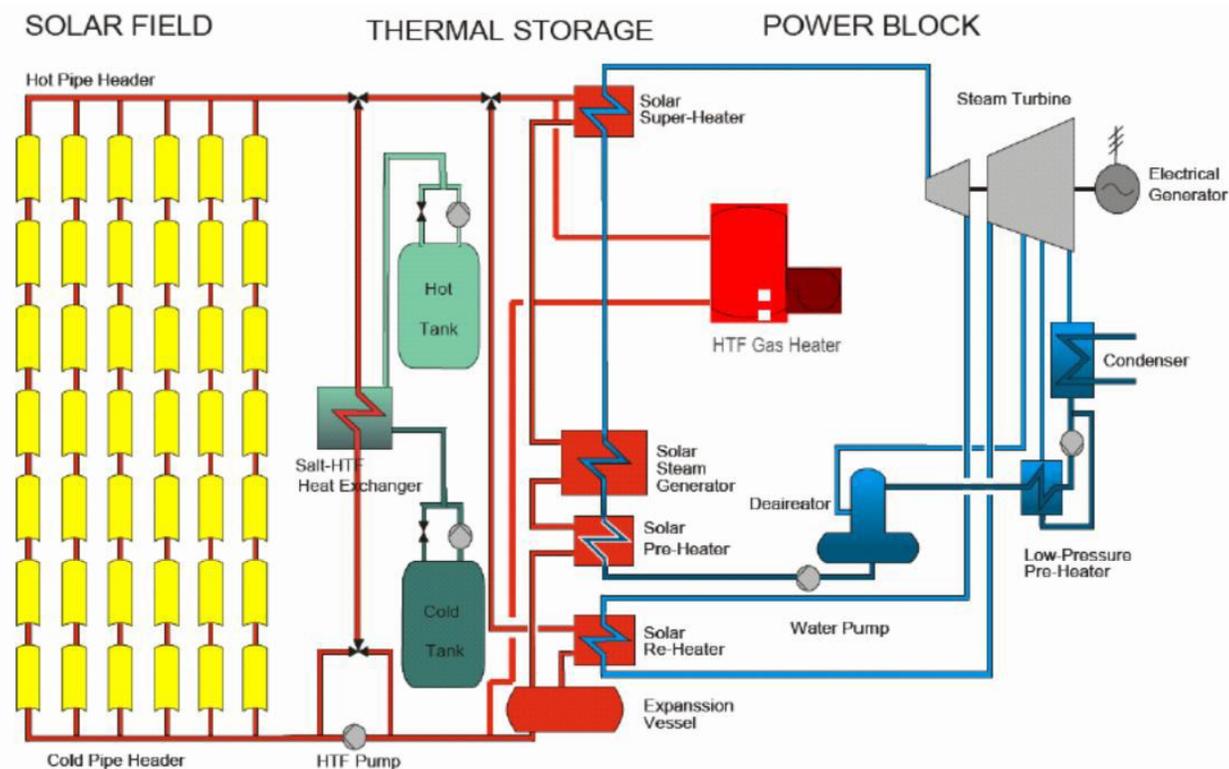
The Government of Egypt is committed to develop utilization of renewable energy resources, recognizing the important role they can play in meeting future clean energy needs.

The Ministry of Electricity and Energy strategy is to cover 12% of the Egypt's electric power demand through renewable energy resources by year 2020, The New and Renewable Energy Authority "NREA" prepared a program for number of renewable energy electric generation projects, mainly utilizing solar thermal and wind resources.

At 2011, NREA has been executed the first Integrated solar combined cycle project (ISCC) total capacity 140 MW, part of them 20 MW form Solar Energy as a clean and environmental friendly electric generate through the Egyptian ambition program.

In the frame of Egyptian Solar plane for generate electricity by solar energy; NREA prepares technical and financial studies in addition to environmental and social effects for 100 MW Solar thermal power plant in Kom Ombo – Aswan,

The plant solar field is concentrated parabolic trough with 4-6 hrs thermal storage as flows:



General description for the plant

1- Components

a- Solar field

Consists of concentrated solar mirrors arrays (parabolic trough) with total land area 3.5 Km² that is near to Bin ban village – Kom Ombo , west of Cairo – Aswan road



The plant works by concentrated solar energy on a special receiver during the day as flow:

- Solar field for collecting solar energy (Parabolic Trough Technology) to generate and introduce steam to the power block,
- Steam turbine and Molten salt storage system.

b- Heat transfer fluid loops (oil loop)

The temperature of special oil in the receiver is about 400 °c and pressure 12 bar, then the oil is pumped to heat exchanger to generate super heated steam, this steam is pushed to the steam turbine to generate electricity.

c- Thermal storage

By using molten salt as storage material with 2-tank technology (hot & cold), we can store solar thermal energy during the day in the hot tank and then we can use thermal heat



from the hot tank to generate enough steam to generate electricity at night from 4-6 hrs to share in cover the peak load at night .

d- Power Block

It consists of steam turbine, Mechanical parts, electrical parts and the generator; the power block is fixed in building with 20 m max. height for generated unit of 100 MW.

In case of far cooling water source, the max height of cooling tower is 20 m.
The electric energy generated will be 385 Million Kwhr annually, saving about 90,000 Ton Oil Equivalent (T.O.E) and reduce emission about 200,000 tons CO₂.

1- Investment coast

The total Investment coast approximately is 750 million \$ distributed as follow:

- 580 million \$ foreign component.
- 170 million \$ local component

Available Financial resource

- World Bank and African Development Bank are agree to finance by 170 million \$ (soft loan), and 100 million \$ (CTF fund).
- 50 million € from (EIB) and (ADF).
- 50 million € from Government of Germany
- 150- 170 million € from (KFW).