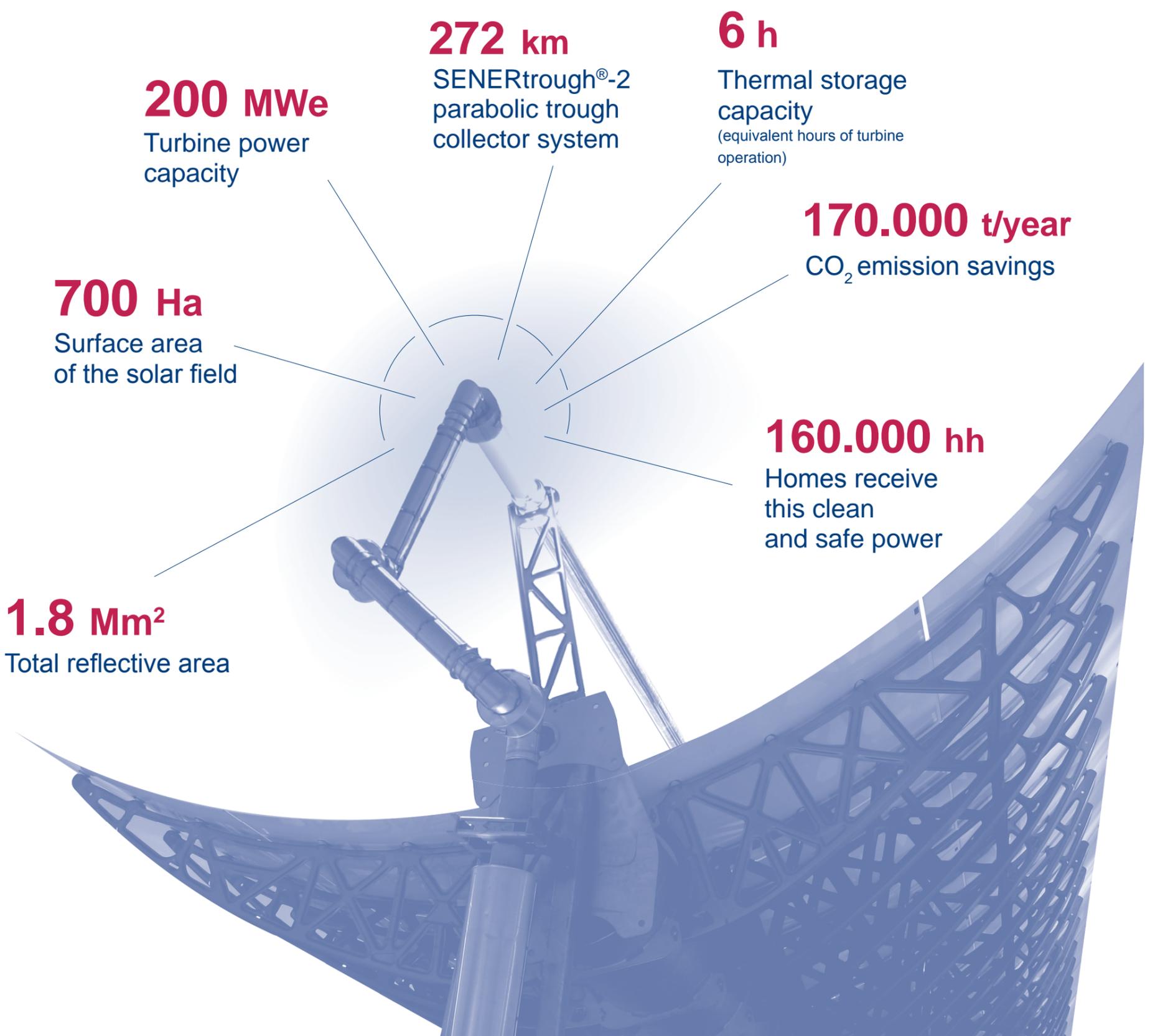


NOORo II

Power,
Oil & Gas

- Concentrated solar power plant with second-generation parabolic trough collector technology SENERtrough®-2.
- Part of NOORo (Ouarzazate, Morocco), the largest complex of concentrating solar power (CSP) in the world.
- Equipped with molten salt thermal storage system to continue to produce electricity after sundown, covering the 5 hours of peak electricity demand.

In CSP, SENER is world leader not only in the number of projects it has under its belt, the majority turnkey projects, but also for the development of proprietary technology applied to these plants, where it is also able to carry out their operation and maintenance.



NOORo II

How it works

Power,
Oil & Gas

1 SENERtrough®-2 collectors
Solar radiation beams on the SENERtrough®-2 collectors which concentrate said radiation in the central tube through which fluid heated to very high temperatures circulates.
This fluid, generically called HTF (Heat Transfer Fluid), is in this case similar to oil in composition.

2 Steam generator system
The HTF is pumped through the solar field where it is heated before passing to the steam generator, where it transfers its heat to vaporize water.

3 Steam turbine
The steam produced under high pressure is used to move the turbine. The turbine is connected to an alternator that generates electric power.

4 Air cooled condenser
The air cooled condenser provides the necessary cooling for condensing the steam that leaves the turbine. Using an air cooled condenser reduces the water consumption of the plant in more than 80%.

5 Heat exchanger
During the day part of the thermal energy of the solar field, it is stored. This is done by diverting some of the heated HTF to the exchanger, where it transfers its heat to the salts.

6 Thermal storage system
6.1 To fill up the storage system, cold salt is pumped from the cold-salt tank to the heat exchanger, where the HTF heats it. The salts are then stored in the hot-salt tank.
6.2 During discharge, the stored hot salt is pumped to the same heat exchanger to heat the HTF and continue generating electricity even during periods when there is no solar radiation.

7 Electric Generator
The electricity is delivered to a transformer to be injected into the distribution grid.

