TURNKEY CONCENTRATED SOLAR THERMAL PLANT FOR STEAM AND ELECTRICITY PRODUCTION

A ROBUST AND COST EFFECTIVE SOLAR TECHNOLOGY WITH A HIGH LOCAL CONTENT
SUNCNIM, AN INTEGRATED SOLAR INDUSTRIAL ACTOR

FRESNEL COLLECTOR TECHNOLOGY

THE SOLAR FIELD IS BASED ON THE TECHNOLOGY KNOWN AS FRESNEL MIRRORS. MOVABLE MIRRORS CONCENTRATE THE SUN’S RAYS ONTO A FIXED RECEPTOR TUBE PLACED 10 METERS ABOVE THE GROUND. WATER CIRCULATING IN THE RECEPTOR TUBE IS THEN HEATED AND CONVERTED INTO STEAM.

The mirrors are rotated to follow the sunpath throughout the day. The steam thus produced can be used for generating power and heat.

SUNCNIM has the knowhow and experience of the overall solar project lifecycle.

- **Development**: project finance through an Independent Power Producer scheme.
- **Manufacture** of the entire solar field
- **Construction** in the framework of a turnkey contract provider
- **Operation** of the plant.

Throughout all these steps, SUNCNIM has the backing and resources of its parent company, the CNIM group, specialized in EPC projects for utility power generation plants in over a dozen countries and for more than 50 years.

Thus, our customers can rely on our:
- Financial and industrial strengths
- Technology knowhow
- EPC capabilities

TURNKEY SOLAR APPLICATION FOR ELECTRICITY AND STEAM GENERATION

- **Solar Field**: Production of electricity through existing thermal power generation plant
- **Biomass / Fossil Auxiliary Boiler**: Production of steam for industrial plants, food, mine, textile, chemical, desalination, cooling.
- **Thermal Storage**: Steam accumulator
- **Steam Turbine**: Production of electricity for grid and off-grid electricity networks, Thermal Enhanced Oil Recovery
- **Hybridization**: Production of electricity through existing thermal power generation plant
THE MAIN ADVANTAGES OF THE TECHNOLOGY

**SIMPLE, ROBUST AND MODULAR**
- Direct steam generation: water as working fluid
- Fixed receiver, flat glass mirror reflector
- Modular and scalable conception
- Low wind profile
- Fully automatic cleaning system
- Equipment designed and proven for harsh working conditions, namely, for strong winds, sandstorms, hail, snow and earthquakes.

**SIMPLE AND RAPID INSTALLATION**
- Rapid field installation: 10 - 24 months
- Use of standard tools: small scaffolding, articulated boom....

**ENVIRONMENTAL FRIENDLY**
- Foundations in steel or screw piles. Concrete is unnecessary
- High recycling rate for the dismantling step: main components are steel & glass

**COST EFFECTIVE TECHNOLOGY**
- Lowest construction cost of CSP technology: standard material, high local content
- Lowest operation cost of CSP technology: automatic cleaning system, operation in automatic mode
- Most land efficient solar thermal technology
- Storage technology to increase the operating period

**HIGH LOCAL CONTENT TECHNOLOGY**
- Mobile workshop on project site to manufacture the reflector
- Standard materials sourced locally
- Contribute to local economic development and job creation

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THE COMPONENTS OF CNIM SOLAR TECHNOLOGY

1. **HELIOSTATS**
The heliostats comprise a support made up of thin metal sheets on which the plane mirrors are mechanically curved.

2. **RECEIVER**
The construction or operation works are carried with standard hand tools, an articulated boom and, small scaffolding.

3. **MOBILE WORKSHOP**
The reflectors are manufactured on project site in a mobile workshop for cost effectiveness and local content purposes.

4. **CLEANING SYSTEM**
SUNCNIM robot for automatic cleaning mirrors ensures the highest energy production possible, whilst minimizing the water consumption through a patented system.
OUR COMPLETED PROJECTS

CNIM solar commercial module in automatic operation since 2010 in France: 500 kWth.

OUR CURRENT CONTRACTS

9 MWe concentrated solar power plant in the Eastern Pyrénées, with heat storage. First world Fresnel solar plant with storage scheduled to come into service in 2017.

SUNCNIM is a subsidiary of CNIM 55% and BPI 45 % and has the backing and resources of its parent company, the CNIM group, specialized in EPC projects for utility power generation plants in over a dozen countries and for more than 50 years.

The CNIM Group designs and produces turnkey industrial solutions with high technological content, and offers expertise, services and operating solutions in the fields of Environment, Energy, Defense, Life Sciences and Industry. CNIM Group is a medium-sized company with 2 900 employees including 1 500 engineers. CNIM generates an annual revenue close to 800 million Euro, two thirds of which being from exports.

Bpifrance, a subsidiary of the state-owned Caisse des Dépôts, is a trusted partner of business and provides loans, guarantees and equity funding to assist companies from start-up to stock market listing. Bpifrance also provides assistance and support services to underpin innovation, external growth and exports.

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