

Development and demonstration of a micro-concentrating solar plant with high local content

Online 6 min video on CSP4Africa: <https://www.youtube.com/watch?v=1Ven5-xsgts>

Concentrating solar power is considered as one of the promising ways for future sustainable electricity generation, especially in the Sahelian region. In the framework of a previous project, named “CSP4Africa”, we have designed and constructed a micro-concentrating solar power plant (power tower) as possible solution for rural electrification in Sahelian countries. The design of the power plant was thought in such a way to make locally possible the manufacturing of most of the components: local mankind and local materials are promoted and valued with simplification of the design of the components. We have shown that *Jatropha* vegetable oil, a locally produced non-edible oil, could be used to store the heat and continue generating electricity at night-time. It offers excellent technical, economic and environmental benefits, compared to the commonly used oils in CSP. We have tested various components of the plants at the end of the project but some are still to be fully operated, especially the heliostats. **The heliostats are operating partially (could focus on the receiver only for few hours). The main challenge is to fix the mechanical issues encountered with the heliostats; this may lead to slightly change their design. An “audit” of the current heliostats is then needed.**

An alternative pedestrial heliostat is also under construction and there is a need to develop a concept of close loop solar tracking.

HIGH LOCAL CONTENT, SIMPLE, ROBUST, LOCALLY TAILORED LOW TECH



Main activities foreseen

- Audit the design of the heliostats and correct the problems or change the strategy (tracking: mechanical or control aspects): ideally, mechanical engineering
- Propose a close-loop tracking, ideally, electrical engineering