

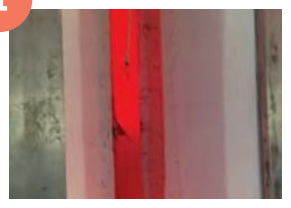
High Temperature concentrated solar thermal power plant with particle receiver and direct thermal storage



Heat transfer in solar-heated 1m-long receiver tube

Bare tube and fine tube testing. Temperature distribution and heat transfer coefficient.
June 2017 - January 2019

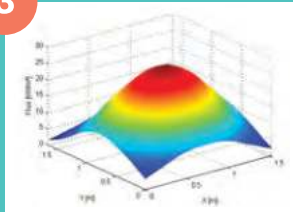
1



Solid flow regime in long tubes

Measurement of the transition between bubbling and slugging regimes.
December 2017

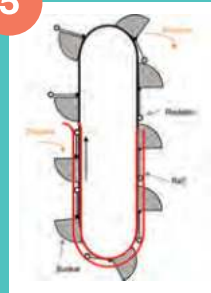
3



Concept for a 150 MW solar power plant based on the particle technology

Conceptual design of a multi-tower 150 MW solar power plant with particle circulation.
November 2018

5



Construction of the solar loop components

Manufacturing of the solar receiver, the heat exchanger and the storage bins.
January 2019

7



Complete solar loop testing

Testing and performance evaluation of the particle solar loop.
March 2021

11

Starting the pilot loop testing

Definition of the parameters for circulating the particles in close loop.
October 2020

9

PROJECT STARTING
OCTOBER 2016

2017

2018

2019

2020

2021

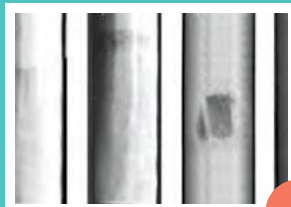
PROJECT ENDING
JULY 2021



2

High efficiency thermodynamic cycles

Selection of various cycles that can reach 50% efficiency.
November 2017



4

Design of the pilot loop to be tested

Design of all the components of the loop to be tested atop the Themis solar tower and integration in the focal zone.
March 2018



6

Themis solar field performance assessment

Design, construction and implementation of a moving bar for measuring the solar flux distribution at the solar receiver aperture.
December 2018



8

Delivery of the solar loop components at Themis site

Delivery and assembly of the main components.
May 2019 - September 2020

10

Testing of the solar receiver

Measurement of the solar receiver efficiency.
January 2021

12

Full system testing

Testing and performance evaluation of the complete loop including the turbine.
May 2021

