

# COMPETITIVE SOLAR POWER TOWERS

## OBJECTIVE

The global objective of this project is to increase concentrated solar power plant efficiencies and reduce levelised cost of electricity (LCOE) by developing the key components of an innovative plant configuration. This plant configuration is based on a multi-tower decoupled advanced solar combined cycle approach (see Figure 1) that not only increases cycle efficiencies but also avoids frequent transients and inefficient partial loads, maximizing overall efficiency, reliability as well as dispatchability.

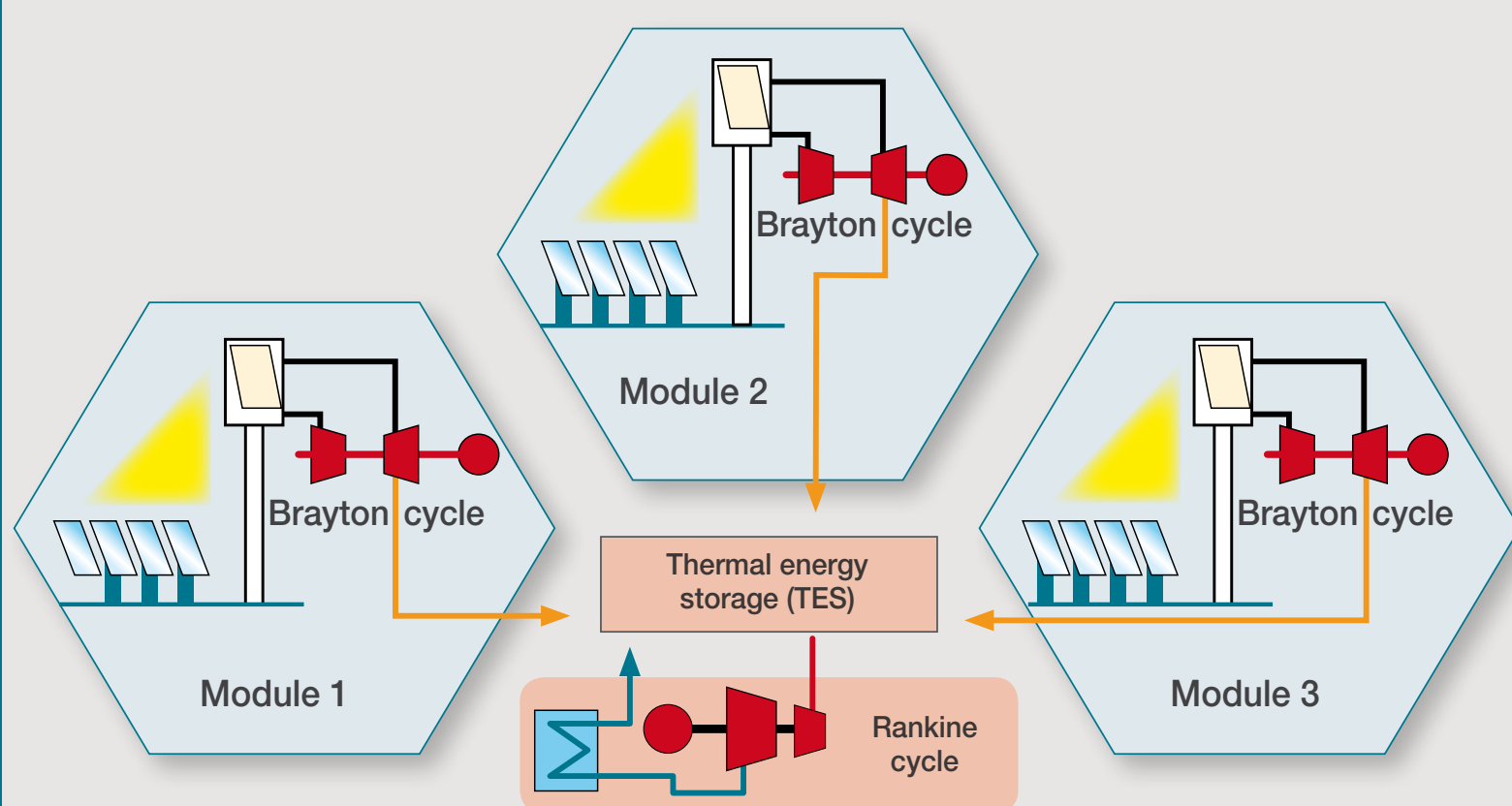


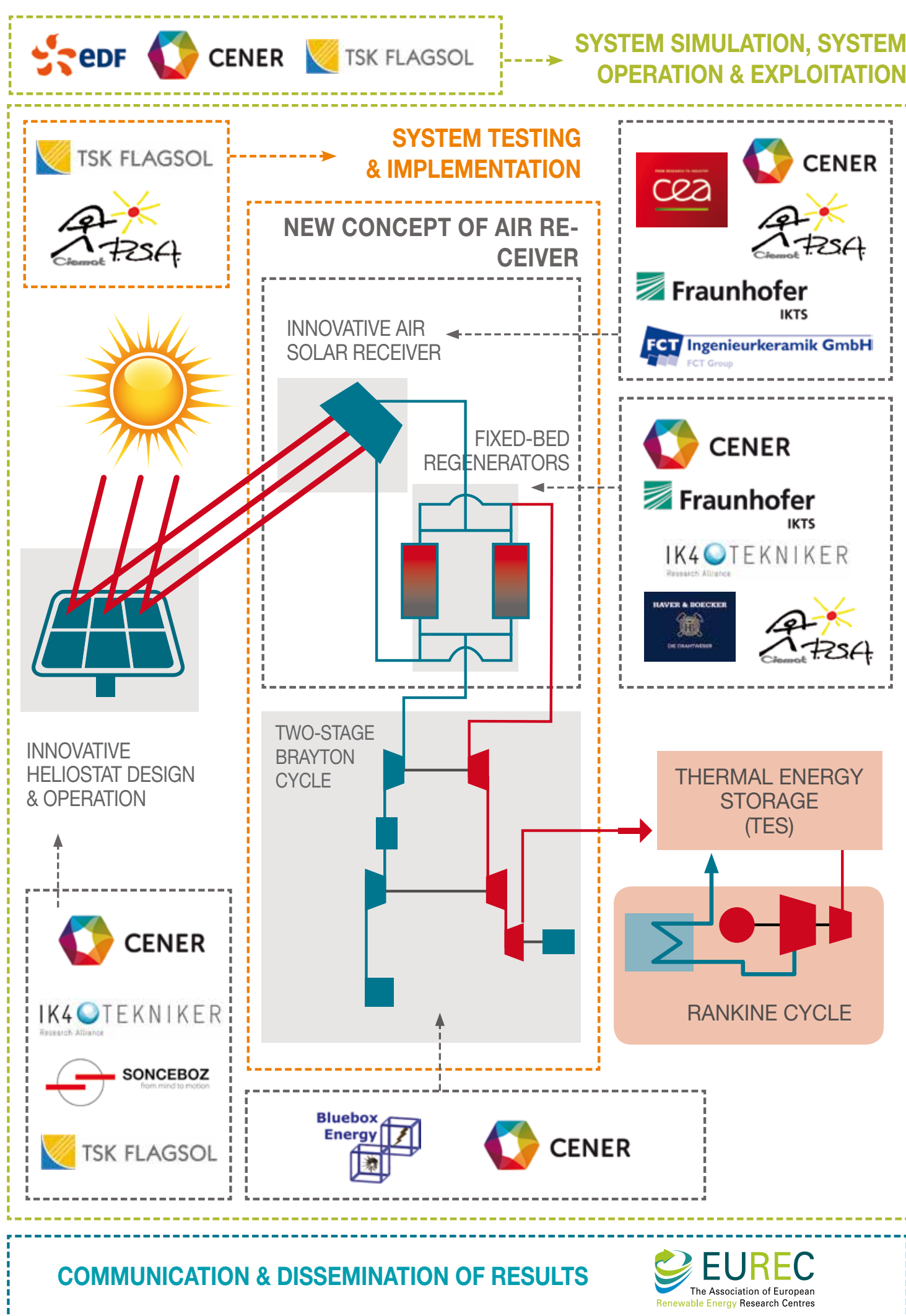
Figure 1  
The CAPTURE plant configuration is based on a **multi-tower decoupled advanced solar combined cycle approach**

The CAPTURE prototypes will be tested at the "Plataforma Solar de Almería", a well-known solar test area in the south of Spain, where all necessary infrastructure, such as an experimental tower and heliostat field are already available and ready to use.

## CAPTURE will focus on the following activities:

- The development of an innovative unpressurized air solar receiver unit, composed of an open volumetric receiver, allowing operating temperatures beyond 1200°C.
- A network of highly efficient fixed-bed regenerative heat exchangers working in alternating modes that allow to reach a thermal receiver overall efficiency of more than 80%.
- A high efficiency two-stage, intercooled Brayton gas turbine cycle.
- Validation-scale prototypes for the key elements as well as a complete solar-receiver Brayton-cycle unit will be developed and tested.
- Development of small-area downsized heliostats that will enable improved solar flux control at the solar receiver through automatic heliostat field calibration.
- The complete theoretical assessment and optimisation of the modular multi-tower decoupled solar combined cycle concept (DSCC) for easing capital investments.

**THE TEAM:** The CAPTURE consortium is composed of 13 partners coming from six European countries, whose complementary expertise will enable to successfully deliver the expected results:



## MORE INFORMATION:

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