

H2020 project: CAPTure

Competitive Solar Power Towers

May 2015 – April 2019

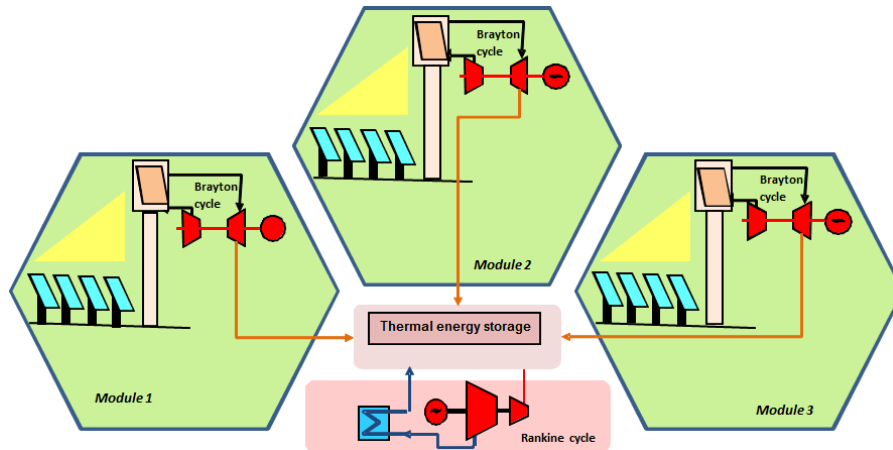


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CAPTure Consortium



Project objectives



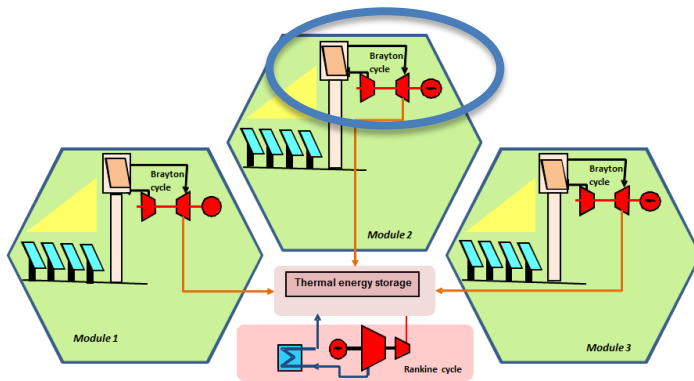
Decoupled solar combined cycle



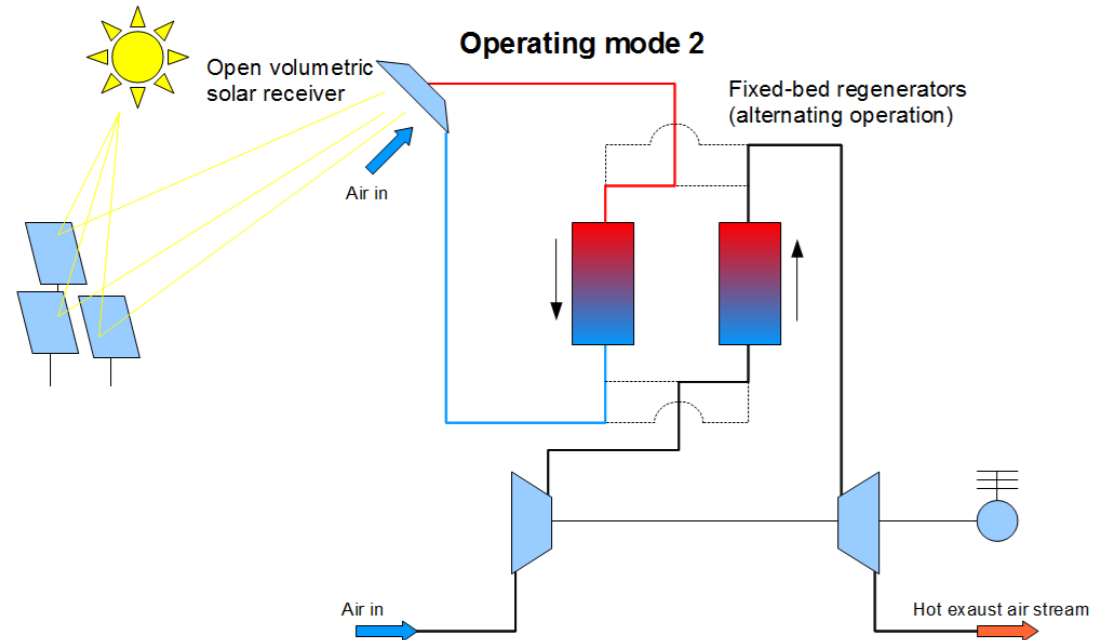
Small heliostat for mass production

- Increase plant efficiencies and reduce levelized cost of electricity (LCOE) by proposing an innovative plant concept
- Downsized heliostat for mass production + smart calibration system
- Validating the most critical components in the relevant environment

Project concept

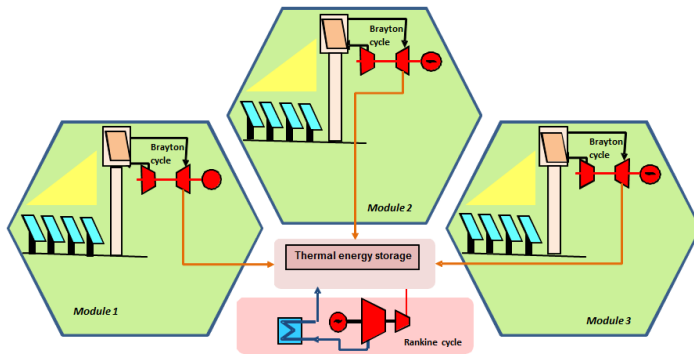


Decoupled solar combined cycle



- ☑ Solar-driven hot air turbine prototype is going to be installed at the PSA
- ☑ An open volumetric solar receiver charges a regenerator
- ☑ The regenerator is pressurized and discharged, driving the turbine

Expected results and impacts



Decoupled solar combined cycle

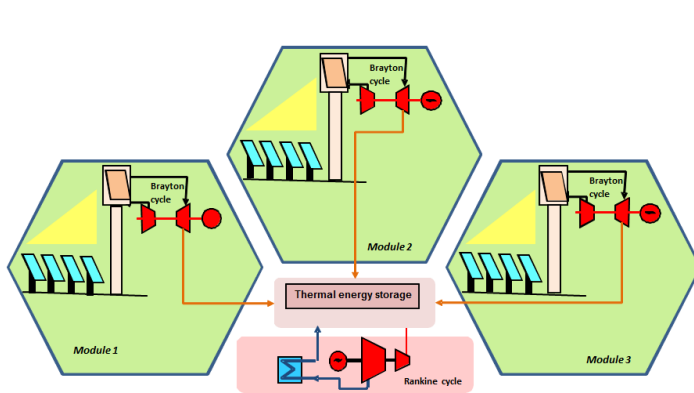
Expected results:

- Validated concept of a solar driven hot air turbine
- Optimized decoupled solar combined cycle (DSCC) plant concept
- Validated downsized heliostat - optimized for mass production
- Validated smart calibration system

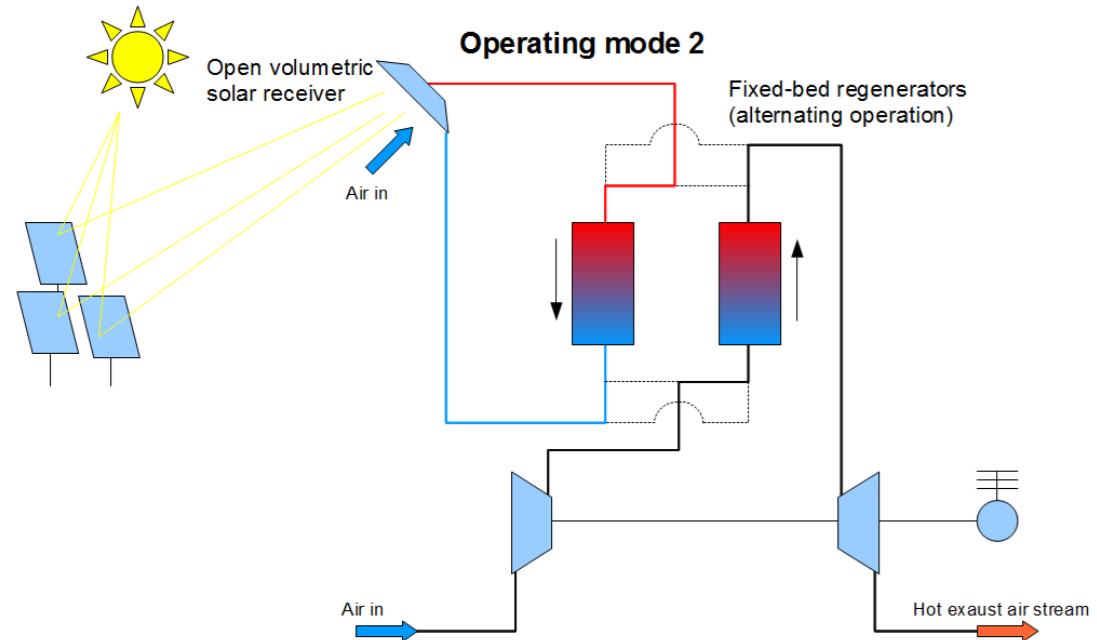
Expected impacts:

- A global CAPEX reduction of up to 35% (cheaper heliostat field, more efficient power cycle)
- OPEX reduction between 15 - 25% (smart heliostat control system)
- LCOE costs reduction between 25 - 31%

Major challenges and barriers



Decoupled solar combined cycle



- The most critical component is the regenerator (pressurization, depressurization, low pressure drop objective across valves and matrix)
- The open solar receiver needs a high degree of air recirculation to keep system efficiency high



Thank you for your
attention!

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