

ABSTRACT:

In this paper, we present the results of the modelling and the simulation of the solar/gas power plant of Hassi R'Mel in Algeria. The choice of the ISCCS technology for the first hybrid solar / gas power plant in Algeria guarantee a great availability without storage for a cleaner electricity production. In the near future, the gained experience should help the transition to an autonomous 100% solar power plant. We considered two subsystems: the solar field and the power cycle loop (Rankine cycle). A numerical model of the solar field and power cycle has been established using the STEC library under TRNSYS. The computation of the exergy losses in the plant shows that most of the irreversibilities occur in the gas turbine cycle and the steam generator. The ISCCS performances calculations, led to a solar field efficiency of 58.89% while the efficiency of the plant without the solar field is 51.12%