Review of: "Technical and Financial Viability of a 1 MW CSP Power Plant with Organic Rankine Module: Case Study for a Northeastern Brazilian City"

Vijayaraja Loganathan

Potential competing interests: No potential competing interests to declare.

This paper estimated a 1 MWe parabolic trough concentrating solar power plant using an organic rankine cycle to convert thermal power into electricity. Several different configurations, differing in number of collectors and size of thermal energy storage, are compared. The technology and economy of the system are analyzed. However, there are still some issues that need to be revised.

1. Some abbreviations need to be explained when used for the first time, like CSP.
2. The system model is described in Chapter 2, but there is no detailed system diagram or layout, making it difficult for non-specialists to understand.
3. The ORC system model and calculation are not detailed enough; the ORC system net electrical efficiency of 23.8% is too ideal; the actual ORC system efficiency is affected by operating conditions; the author should describe it in detail.
4. The paper analyzes the technical and financial elements of the CSP plant in great detail; however, it might use some more sophisticated analysis and tools, such as artificial intelligence, MATLAB, or CFD.
5. These resources might offer more precise financial estimates and in-depth technical insights, increasing the study's applicability in the real world. Nonetheless, the CSP plant's innovative and promising usage of an ORC has the potential to significantly increase both cost-effectiveness and efficiency.
6. Table 6 provides some technical data, but it lacks a comprehensive thermodynamic model. There are a ton of studies on CSP; the author ought to compare more LCOE and plant efficiency studies.