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

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Potential competing interests: No potential competing interests to declare.

The authors in this study simulate and optimize a 1MW parabolic trough-concentrating solar power plant utilizing an Organic Rankine Cycle (ORC) for the conversion of thermal energy into electricity. The study draws solar data from Fortaleza, the capital city of Ceará, Brazil, and employs a year-round simulation based on hourly acquired data. Various configurations, differing in the number of collectors and the size of thermal energy storage, are thoroughly explored to identify the most optimal design.

One commendable aspect of the paper is its in-depth analysis of capital and operational and maintenance costs for various components. The identification of collector acquisition as the most significant cost, constituting 74% and 58% of capital and operational and maintenance costs, respectively, provides crucial insights for both researchers and practitioners.

This paper makes a significant contribution to the field by presenting a thorough analysis of a parabolic trough-concentrating solar power plant. The detailed exploration of different configurations and the associated technical and financial performances enriches our understanding of key cost drivers, making it a valuable reference for researchers, engineers, and decision-makers in the renewable energy sector.