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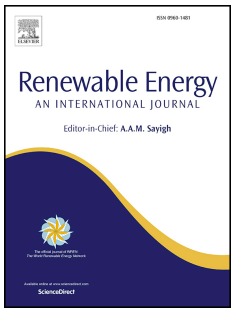

Extracting potable water from humid air plus electric wind generation: A possible application for a Brazilian prototype

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Extracting Potable Water from Humid Air Plus Electric Wind Generation: A Possible Application for a Brazilian Prototype.

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Abstract

This work shows a technical review for two promising technologies and two commercial systems that can be applied in Hybrid Wind Systems —also known as Extraction Water from Air Systems (EWAS) — for the special weather conditions presents in Brazilian northeast. Additionally, a full description of the main components for the innovative technologies and for commercial solutions are explained. An energy consumption analysis for each one of these systems is made for comparison purposes. Water extraction capacity and energy efficiency are evaluated (for two commercial EWAS) for a theoretical operation point in the middle of the North–eastern semi–desert region. This point is obtained by means of the the well–known humid air diagram. Important information about minimum environmental conditions for Membranes and Coils are also considered. Three main types of electric generators are described, including its advantages and disadvantages, for the estimation of the power ratio to generating electricity and water. For all above, the right sizing of the future Brazilian EWAS prototype and its possible application in a semi-arid region is the objective of this paper.

Keywords: Atmospheric Vapor, Energy Efficiency, Water Production, Wind Energy, Wind Generation, Humid Air, Brazil.