



A KEY REVIEW ON EXERGETIC ANALYSIS AND ASSESSMENT OF SOLAR ENERGY SYSTEMS FOR A SUSTAINABLE FUTURE

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Summary: *Energy resources and their utilization relate to sustainable development. In attaining sustainable development, increasing the energy efficiencies of processes utilizing sustainable energy resources plays an important role. The utilization of renewable energy offers a wide range of exceptional benefits. There is also a link between exergy and sustainable development. A sustainable energy system may be regarded as a cost-efficient, reliable, and environmentally friendly energy system that effectively utilizes local resources and networks. Exergy analysis has been widely used in the design, simulation and performance evaluation of solar energy systems. This paper reviews exergetic analysis solar energy systems. In this regard, general relations between energy, exergy, entropy and exergy are given. Next, use of renewable energy resources are exergetically analyzed and evaluated for different solar energy systems (solar collector applications such as solar water heating systems).*

Keywords: *Analysis; Efficiency; Exergy; Renewable energy; Solar; Sustainability;*

1. INTRODUCTION

Achieving solution to environmental problems that we face today requires long-term potential actions for sustainable development. In this regard, renewable energy are inexhaustible and offer many environmental benefits compared to conventional energy sources. Even though conventional sources, meet most of the energy demand at the moment, the role of renewable energy resources and their current advances have to take more relevance in order to contribute to energy supply and support the energy conservation (or efficiency) strategy by establishing energy management systems. The use of renewable energy offers a range of exceptional benefits, including: a decrease in external energy dependence; a boost to local and regional component manufacturing industries; promotion of regional engineering and consultancy services specializing in the utilization of renewable energy; decrease in

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