

### عنوان مقاله:

Energy modeling and simulation including particle technologies within single and double pass solar air heaters

محل انتشار:

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#### خلاصه مقاله:

In order to obtain the best performance of the solar air heaters, it is necessary to find optimum performance conditions. The aim of this research paper is to achieve optimum conditions, by comparing single and double pass solar air heaters. Also, a brief review study of various related research works of all scenarios for a single and double pass and packed bed (including particle technologies) solar air heaters was carried out to observe the challenges of the mentioned systems. Energy modeling and simulation with EES and MATLAB open source code software indicated significant results in efficiency. According to the obtained results, it can be explained that double pass duct not necessarily always increases the overall system energy efficiency. Results of this work indicate, higher ambient air temperature (inlet air temperature) and lower solar irradiation can increase overall energy efficiency of solar double pass systems. More precisely at solar irradiation of 916 W/m2 and inlet air temperature of 302 K, the system achieves the targeted optimum value in energy efficiency, approximately 90%, which is considerably more than the 65% as an .average value

## کلمات کلیدی:

"Energy modeling, Energy performance, Particles parameters, Heat transfer

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