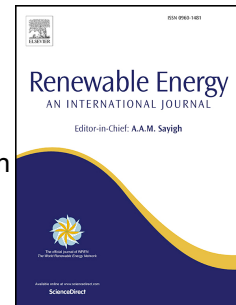


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Performance study of a grid-connected photovoltaic powered central air
conditioner in the South China climate

Y. Li^{1,*}, B. Y. Zhao¹, Z. G. Zhao², R. A Taylor³, R. Z. Wang¹

¹Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, Shanghai
200240, China

²GREE Electric Appliances Inc. of Zhuhai, Zhuhai, China

³School of Mechanical and Manufacturing Engineering, The University of New South
Wales (UNSW), Kensington, New South Wales 2052, Australia

Abstract:

A photovoltaic (PV) integrated energy system is an ideal alternative to meet the heavy power demand of air conditioners in summer in hot climate areas. This paper presents the practical operation of a grid-connected, photovoltaic-powered, central air conditioner for an office building in South China. Typical operation characteristics have been analyzed regarding three indices such as solar fraction (SF), net solar fraction (NSF) and surplus energy ratio (SER). Different weather patterns such as sunny, cloudy and overcast based on the percentage of cloud coverage have been considered in this study. It is found that the performance of the system was significantly influenced by the meteorological conditions and that the value of SF is in different ranges for the three weather patterns. Additionally, the NSF and SER show meaningful trends for the three weather patterns. In addition, the SF is high in April,

*Corresponding author. Tel.: +86 21 34206056; fax: +86 21 34206056.
E-mail address: liyo@sjtu.edu.cn (Y. Li).

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