

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

The optimization of Stirling refrigerator and Stirling heat engine

XIN-MEI ZHU, Yangzhou University — The optimization of an irreversible Stirling refrigerator or a Stirling heat engine is an important research subject for a long time. Taking into account of the influence of mixed thermal resistance and regeneration loss in the performance study, we have derived the optimal relation of both of them. For Stirling refrigerator, we have deduced the optimal relation between the thermal resistance coefficient and the efficiency. To the Stirling heat engine, we have deduced the optimal relation between the power output and the efficiency. The conclusions obtained mirror the observed performance of the Stirling refrigerator or the Stirling heat engine quite well. Thus, the results may provide a new theoretical guidance to the optimal design and the selection of optimal operating condition of the Stirling refrigerator or the Stirling heat engine.

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Date submitted: 05 Nov 2006

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