Heat Transfer and Fluid Dynamics Measurements in the Expansion Space of a Stirling Cycle Engine (Paperback)

By -

Bibliogov, United States, 2013. Paperback. Book Condition: New. 244 x 190 mm. Language: English . Brand New Book ***** Print on Demand *****.The heater (or acceptor) of a Stirling engine, where most of the thermal energy is accepted into the engine by heat transfer, is the hottest part of the engine. Almost as hot is the adjacent expansion space of the engine. In the expansion space, the flow is oscillatory, impinging on a two-dimensional concavely-curved surface. Knowing the heat transfer on the inside surface of the engine head is critical to the engine design for efficiency and reliability. However, the flow in this region is not well understood and support is required to develop the CFD codes needed to design modern Stirling engines of high efficiency and power output. The present project is to experimentally investigate the flow and heat transfer in the heater head region. Flow fields and heat transfer coefficients are measured to characterize the oscillatory flow as well as to supply experimental validation for the CFD Stirling engine design codes. Presented also is a discussion of how these results might be used for heater head and acceptor region design calculations.

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