

The Stirling Engine and Its Thermal Efficiency

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ABSTRACT

The formulas for the thermal efficiency of an ideal Stirling engine without regenerator, with ideal regenerator and with real regenerator are derived in this paper. The paper also includes parametric analyses of chosen parameters that have an influence on thermal efficiency, such as the volume ratio V_{max}/V_{min} , regenerator efficiency, low temperature, high temperature and temperature difference.

KEYWORDS

Stirling engine
Hot air engine
Heat engine cycle
Thermal efficiency
Regenerator efficiency
Parametric analysis
Volume ratio
Compression ratio
High temperature
Low temperature
Temperature difference