

Abstract Submitted
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Optimizing the performance of a heat engine: A simulation study

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— We performed a simulation study of a simple heat engine as it undergoes Carnot-type cyclic motion in a finite time over a wide range of piston speeds. There exists a specific piston speed at which the power delivered by the engine is maximum (P_{max}) and its corresponding efficiency is slightly larger than *half* of the Carnot efficiency ($1/2 \eta_c$). An optimization criterion leads to a trade-off between high power and high efficiency with respective values of $4/5 P_{max}$ and $3/4 \eta_c$. In addition, we found the time taken at the optimized state to be twice the time taken when operating at maximum power.

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