Engines with ideal efficiency and nonzero power for sublinear transport laws

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Abstract

It is known that an engine with ideal efficiency has zero power because a reverisible cycle takes an infinite time. However, at least from a theoretical point of view, it is possible to conceive (irreversible) engines with nonzero power that reach ideal efficiency. This is achieved by replacing the usual linear tranport law by a sublinear one and taking the step-function limit for the particle current (chemical engine) or the heat current (heat engine) versus the applied force.

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