

Thermal Efficiency of 100%

Does a heat engine that has a thermal efficiency of 100% necessarily violate (1) the first law of and (2) the second law of thermodynamics?

Answer: 1) No, 2) Yes

Explanation: 1) No and 2) Yes, according to the second law, no heat engine can have an efficiency of 100% also reversible engines (no friction or any other irreversibility's) always have to reject heat to a low temperature reservoir making them less efficient than 100%.