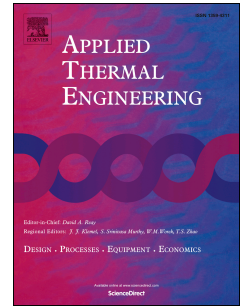


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Thermoeconomic considerations in the allocation of heat transfer inventory for irreversible power systems

Bilal Ahmed Qureshi



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1 **Thermoeconomic considerations in the allocation of heat transfer**
2 **inventory for irreversible power systems**

3
4 Bilal Ahmed Qureshi*

5 Center of Excellence for Scientific Research Collaboration with MIT, KFUPM Box # 1276

6 King Fahd University of Petroleum & Minerals

7 Dhahran 31261, Saudi Arabia

8
9 **ABSTRACT**

10 In this paper, thermoeconomic optimization of irreversible power systems with finite thermal
11 capacitances for design situation is performed. Investigation is made with respect to the case of
12 specified power output where exact expressions are determined without the use of an internal
13 irreversibility parameter. The use of an internal irreversibility multiplier can omit important
14 details even though it provides insight into real system behavior. Compared to the endoreversible
15 case, the optimum hot- to cold-end unit cost ratio does not result in equal division of heat
16 exchanger conductances and shows variation in the cycle thermal efficiency despite a constant
17 fluid temperature ratio. It is also noted that optimization of the non-dimensional cost function
18 does not translate into optimization of the thermal efficiency.

19
20 **Keywords:** Thermoeconomic; Irreversible; Endoreversible; Optimization; Effectiveness; Overall
21 conductance

22

* Corresponding author: e-mail; bqureshi@kfupm.edu.sa, Tel.: +966 13 860-2685

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