Accepted Manuscript

Title: Unsteady exergy analysis for a recycle and recovery machine

Author: Berkah Fajar TK., Delta Panca N., Gunawan Wicaksono

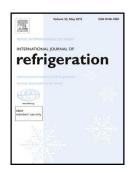
PII: S0140-7007(17)30383-3

DOI: https://doi.org/doi:10.1016/j.ijrefrig.2017.10.002

Reference: JIJR 3767

To appear in: International Journal of Refrigeration

Received date: 28-9-2016 Revised date: 6-9-2017 Accepted date: 1-10-2017



Please cite this article as: Berkah Fajar TK., Delta Panca N., Gunawan Wicaksono, Unsteady exergy analysis for a recycle and recovery machine, *International Journal of Refrigeration* (2017), https://doi.org/doi:10.1016/j.ijrefrig.2017.10.002.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

15th International Conference on Sustainable Energy Technologies – SET 2016 19th – 22nd of July 2016, National University of Singapore, Singapore

Unsteady exergy analysis for a recycle and recovery machine

Berkah FAJAR TK.¹, Delta PANCA N.², Gunawan WICAKSONO³

Highlights

- Analysis exergy for a 2R machine is proposed
- The best design for a 2R machine is based on unsteady process
- Exergy destruction is highly determined by the mass flow rate of refrigerant
- To avoid excessive exergy destruction, should be the recovery time when RTR already 50g

Abstract: Machine 2 R is necessary in order to avoid the release of refrigerant during the repair of an air conditioning machine. The main goals of this paper are to determine the rate of exergy transfer, the rate of exergy destruction and the rate of exergy change in the compressor, condenser, oil separator and 2R machine. This study also determines the performance of the 2 R machine. Pressure, temperature and mass of the refrigerant were measured every 0.5 minutes for 10 minutes. In conclusion, the results of this analysis show that the rate of destruction exergy in the compressor is 59.98%, and in the condenser 25.37%. The value of the Residual Trapped Refrigerant (RTR) of recycling and recovery machine meets the AHRI standard, that is, 34 grams, and the value of the Refrigerant Loss (RL) complies with the AHRI standard, which is 10 grams, while its performance is 91.2%. Keywords: Refrigeration, Exergy, Exergy Destruction, Energy, Entropy

This paper was presented at SET2016

¹ Department of Mechanical Engineering, Diponegoro University, Prof.Sudharto, SH. Street, Tembalang-Semarang 50275, fajarberkah10@gmail.com

² Department of Mechanical Engineering, Diponegoro University, Prof.Sudharto, SH. Street, Tembalang-Semarang 50275, deltapanca@gmail.com

³ Department of Mechanical Engineering, Diponegoro University, Prof.Sudharto, SH. Street, Tembalang-Semarang 50275, gun.wicaksana@gmail.com

Download English Version:

https://daneshyari.com/en/article/7175355

Download Persian Version:

https://daneshyari.com/article/7175355

<u>Daneshyari.com</u>