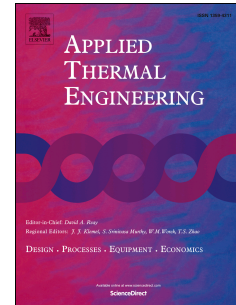


# Accepted Manuscript

Evaluation of the potential recovery of compressor heat losses to enhance the efficiency of refrigeration systems by means of thermoelectric generation

Emilio Navarro-Peris, Jose Miguel Corberan, Zdenek Ancik



PII: S1359-4311(15)00587-6

DOI: [10.1016/j.applthermaleng.2015.06.033](https://doi.org/10.1016/j.applthermaleng.2015.06.033)

Reference: ATE 6721

To appear in: *Applied Thermal Engineering*

Received Date: 2 March 2015

Revised Date: 10 June 2015

Accepted Date: 13 June 2015

Please cite this article as: E. Navarro-Peris, J.M. Corberan, Z. Ancik, Evaluation of the potential recovery of compressor heat losses to enhance the efficiency of refrigeration systems by means of thermoelectric generation, *Applied Thermal Engineering* (2015), doi: 10.1016/j.applthermaleng.2015.06.033.

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.

# Evaluation of the potential recovery of compressor heat losses to enhance the efficiency of refrigeration systems by means of thermoelectric generation

Emilio Navarro-Peris\*<sup>1</sup>, Jose Miguel Corberan<sup>1</sup>, Zdenek Ancik<sup>2</sup>

<sup>1</sup> Instituto de Ingeniería Energética, Universitat Politècnica de València. Camino de Vera s/n, 46022 Valencia, España. Teléfono: 34-963879123, Fax: 34-963877272.

<sup>2</sup> Faculty of Mechanical Engineering, Brno University of Technology, Technická 2, Brno 616 69, Czech Republic. Tel.: +420 541 142 858, Fax: +420 541 142 876

\*Corresponding author: enava@ter.upv.es

**Keywords:** Compressor, Seebeck effect, heat recovery, heat losses.

## Abstract

The present study evaluates the possibilities of increasing efficiency in refrigeration and heat pump systems based on compression cycles by means of using compressor heat losses. In order to do this, the work been divided into the following parts: presentation of the used model of a thermoelectric device in order to estimate the amount of energy recovery from the heat source, an experimental test under several contour conditions to estimate the real temperature difference maintained in a thermoelectric module in contact with the compressor wall and, based on this information, an estimation of the potential amount of energy that can be recovered by this kind of system.

Keywords: Thermoelectric effect, Seebeck effect, harvest, compressor losses

## Nomenclature

COP	Coefficient of performance
I	Current through the TEG
E	Electric input to the module
R	Electric resistance of the module
n	Electrical contact parameter
$\rho$	Electrical resistivity
Q	Heat flux
N	Number of thermocouples
$\alpha$	Seebeck constant

Download English Version:

<https://daneshyari.com/en/article/645411>

Download Persian Version:

<https://daneshyari.com/article/645411>

[Daneshyari.com](https://daneshyari.com)