

## Accepted Manuscript

Parametric study of the wire-on-tube condenser subcooling effect on the performance of vapor compression refrigeration system

Djelloul Azzouzi, Merouane Kelkouli, Fouad Amaryoucef

PII: S1359-4311(16)32685-0

DOI: <http://dx.doi.org/10.1016/j.applthermaleng.2017.05.003>

Reference: ATE 10311

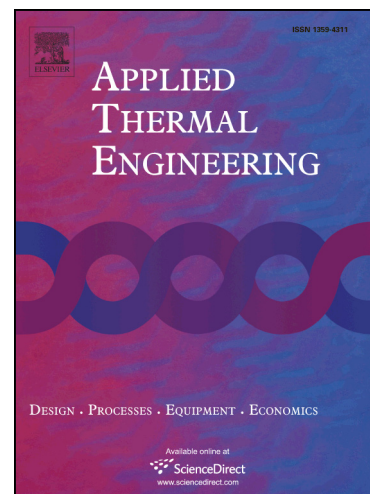
To appear in: *Applied Thermal Engineering*

Received Date: 25 October 2016

Accepted Date: 1 May 2017

Please cite this article as: D. Azzouzi, M. Kelkouli, F. Amaryoucef, Parametric study of the wire-on-tube condenser subcooling effect on the performance of vapor compression refrigeration system, *Applied Thermal Engineering* (2017), doi: <http://dx.doi.org/10.1016/j.applthermaleng.2017.05.003>

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.



**Parametric study of the wire-on-tube condenser subcooling effect on the performance of vapor compression refrigeration system.**

**Djelloul Azzouzi<sup>1, 2, \*</sup>, Merouane Kelkoui<sup>1</sup>, Fouad Amaryoucef<sup>1</sup>**

<sup>1</sup>Faculty of sciences and technology, University of Khemis Miliana, Algeria

<sup>2</sup>Industrial fluids laboratory, measurements and applications, University of Khemis Miliana, Algeria

\*corresponding Author: Road of Tissemsilt, University of Khemis Miliana, Algeria. Email: + [azzouzidjelloul@yahoo.fr](mailto:azzouzidjelloul@yahoo.fr) , Phone +213773455352

**Abstract**

In this paper, a parametric study of the condenser subcooling effect on the performance of vapor compression refrigeration system is presented. The first shutter consists in introducing of an analysis methodology which makes it possible to determine the COP of the refrigeration cycle with subcooling for the three used R12, R134a and R600a as refrigerants. While in the second part, an analytical approach was developed in order to calculate the additive surface of the wire-on-tube condenser used in application apparatus. Variation in subcooling temperature and pressure ratio for all three refrigerants is taken in all stages of this study. The results obtained through this study have shown that, in the subcooling temperature interval from 0°C to 14°C, the condenser additive surface is lower for R600a refrigerant compared to R134a. Moreover, the increase in subcooling temperature plays a significant role in the rise of refrigeration cycle efficiency.

**Keywords:** Domestic refrigerator, Wire-on-tube condenser, subcooling, Coefficient of performance (COP), Heat transfer

Download English Version:

<https://daneshyari.com/en/article/4990945>

Download Persian Version:

<https://daneshyari.com/article/4990945>

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