

Accepted Manuscript

Entransy analysis of secondary network flow distribution in absorption heat exchanger

Xiaoyin Wang, Xiling Zhao, Lin Fu

PII: S0360-5442(17)32015-7

DOI: [10.1016/j.energy.2017.11.157](https://doi.org/10.1016/j.energy.2017.11.157)

Reference: EGY 11945

To appear in: *Energy*

Received Date: 17 May 2017

Revised Date: 29 October 2017

Accepted Date: 28 November 2017

Please cite this article as: Wang X, Zhao X, Fu L, Entransy analysis of secondary network flow distribution in absorption heat exchanger, *Energy* (2018), doi: 10.1016/j.energy.2017.11.157.

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.



Entransy Analysis of Secondary Network Flow Distribution in Absorption Heat Exchanger

Xiaoyin Wang¹, Xiling Zhao^{1*}, Lin Fu¹

¹Department of Building Science, School of Architecture, Tsinghua University, Beijing, PR China

*Corresponding email: zhaoxiling@126.com

Abstract

For substations in large-area district heating systems, the primary network supply water can be used as a driving force to realize heat transfer between the primary and secondary networks under an absorption heat-exchanger technique. An absorption heat-exchanger comprises an absorption heat pump (driven by hot water) and a conventional water-water heat exchanger. Generally, the return water of the secondary network is divided into two parts: one part is sent into the water-water heat exchanger, which is heated by the primary network; the other part is heated in the absorption heat pump. Finally, the water from each part is mixed and transmitted to the end user. The flow distribution of the secondary network affects the return water temperature of the primary network. This paper presents a theoretical analysis of the flow distribution principle for the secondary network. Here, an entransy analysis is adopted as an optimization method for the heat exchange process. The absorption heat-exchanger model is simplified and the mathematical representations of each entransy dissipation part are provided. The optimal flow distribution principle is obtained by calculating the minimum value of the total entransy dissipation. The principle provides a reference for optimized design and operation of the absorption heat exchanger.

Download English Version:

<https://daneshyari.com/en/article/8072149>

Download Persian Version:

<https://daneshyari.com/article/8072149>

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