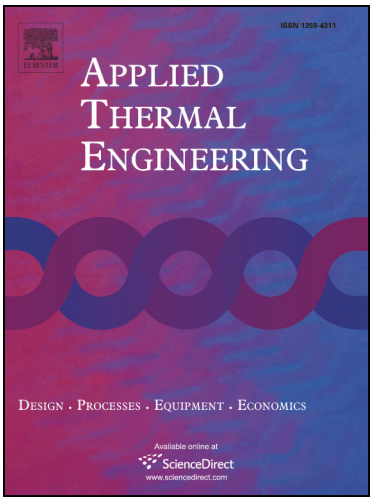
Accepted Manuscript



Research Paper

Impact of Airside Fouling on Microchannel Heat Exchangers

Chengquan Zhang, Ziyan Tang, Ziqi Zhang, Junye Shi, Jiangping Chen, Ming Zhang

PII: S1359-4311(17)32934-4
DOI: http://dx.doi.org/10.1016/j.applthermaleng.2017.08.163
Reference: ATE 11046

To appear in: *Applied Thermal Engineering*

Received Date: 2 May 2017
Revised Date: 30 August 2017
Accepted Date: 30 August 2017

Please cite this article as: C. Zhang, Z. Tang, Z. Zhang, J. Shi, J. Chen, M. Zhang, Impact of Airside Fouling on Microchannel Heat Exchangers, *Applied Thermal Engineering* (2017), doi: http://dx.doi.org/10.1016/j.applthermaleng.2017.08.163

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

Impact of Airside Fouling on Microchannel Heat Exchangers

Chengquan Zhang[a], Ziyan Tang[a], Ziqi Zhang[a], Junye Shi[a], Jiangping Chen[a,*] Ming Zhang[b]

[a]Institute of Refrigeration and Cryogenics, Shanghai Jiao Tong University, Shanghai, 200240, P. R. China. Email: jpchen_sjtu@163.com

[b]BSH Hausgeräte GmbH, Robert-Bosch-Straße, 100, 89537, Giengen, Germany

Highlights

- Different microchannel heat exchangers were tested before and after fouling.
- Fouling was observed and analyzed.
- Fouling mechanism and key factors were proposed in fouling process.

Abstract

In this study, the performance of the microchannel heat exchanger (MCHX) in domestic refrigerators was tested before and after fouling. The louvre-fin and plain-fin heat exchanger (HX) with fin pitches from 1.5mm to 3mm were tested. It was found that, for louvre-fin HXs and plain-fin HXs with the same fin pitch, the former is more sensitive to fouling. Under the situations of dust injection of 100g, the same air speed and the fin pitch of 2mm, the airside pressure of louvre-fin samples and plain-fin samples would respectively increase by 42.4% and 25.5%; their airside heat transfer rates would decrease by 35.6% and 17.9%, respectively. For louvre-fin HXs, according to test results, it seemed that airside pressure drop

Download English Version:

https://daneshyari.com/en/article/4990797

Download Persian Version:

https://daneshyari.com/article/4990797

Daneshyari.com