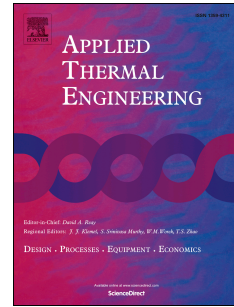


Accepted Manuscript

Developing a new frosting map to guide defrosting control for air-source heat pump units

J.H. Zhu, Y.Y. Sun, W. Wang, S.M. Deng, Y.J. Ge, L.T. Li



PII: S1359-4311(15)00635-3

DOI: [10.1016/j.applthermaleng.2015.06.076](https://doi.org/10.1016/j.applthermaleng.2015.06.076)

Reference: ATE 6769

To appear in: *Applied Thermal Engineering*

Received Date: 14 April 2015

Revised Date: 17 June 2015

Accepted Date: 28 June 2015

Please cite this article as: J.H. Zhu, Y.Y. Sun, W. Wang, S.M. Deng, Y.J. Ge, L.T. Li, Developing a new frosting map to guide defrosting control for air-source heat pump units, *Applied Thermal Engineering* (2015), doi: [10.1016/j.applthermaleng.2015.06.076](https://doi.org/10.1016/j.applthermaleng.2015.06.076).

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.

1 **Developing a new frosting map to guide defrosting control** 2 **for air-source heat pump units**

3 J.H. Zhu^a, Y.Y. Sun^a, W. Wang^{a,*}, S.M. Deng^b, Y.J. Ge^a, L.T. Li^a

4 ^aDepartment of Building Environment and Facility Engineering, College of
5 Architecture and Civil Engineering, Beijing University of Technology, No.100
6 Pingleyuan, Chaoyang District, Beijing 100124, China

7 ^bDepartment of Building Services Engineering, The Hong Kong Polytechnic
8 University, Kowloon, Hong Kong SAR, China

9 **Abstract**

10
11 The development of a new frosting map for air-source heat pumps (ASHPs) based on
12 a temperature-humidity chart is reported in this paper. Through a parametric analysis,
13 two boundary lines (a condensing line and a frosting line) were obtained, dividing the
14 map into three regions: a non-frosting region, a condensing region and a frosting
15 region. Using the simulation results from a generalized numerical model of frost
16 growth, the frosting region was further divided into three indicative zones
17 representing different frosting levels: a severe frosting zone, a moderate frosting zone
18 (I, II) and a mild frosting zone (I, II). Lab and field tests were conducted in order to
19 verify the correctness of the zoning and to obtain indicative defrosting intervals for
20 ASHPs operated at different zones. Based on the test results and using the developed

* Corresponding author. Tel.: +86 010 67391608-804; fax: +86 010 67391608-804
E-mail address: mrwangwei@bjut.edu.cn (W. Wang)

Download English Version:

<https://daneshyari.com/en/article/7048888>

Download Persian Version:

<https://daneshyari.com/article/7048888>

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