

Accepted Manuscript

Performance comparison of jet pumps with round and sharp edge of small opening under oscillatory flow

Ye Feng, Ke Tang, Tao Jin, Kaihao Zhang, Rui Yang

PII: S1359-4311(17)37324-6
DOI: <https://doi.org/10.1016/j.applthermaleng.2018.05.023>
Reference: ATE 12162

To appear in: *Applied Thermal Engineering*

Received Date: 16 November 2017
Revised Date: 22 February 2018
Accepted Date: 7 May 2018

Please cite this article as: Y. Feng, K. Tang, T. Jin, K. Zhang, R. Yang, Performance comparison of jet pumps with round and sharp edge of small opening under oscillatory flow, *Applied Thermal Engineering* (2018), doi: <https://doi.org/10.1016/j.applthermaleng.2018.05.023>

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.



Performance comparison of jet pumps with round and sharp edge of small opening under oscillatory flow

Ye Feng^a, Ke Tang^{a,b,c*}, Tao Jin^{a,b}, Kaihao Zhang^c, and Rui Yang^a

^aCollege of Energy Engineering, Zhejiang University, 38 Zheda Road, Hangzhou 310027, China

^bKey Laboratory of Refrigeration and Cryogenic Technology of Zhejiang Province, Zhejiang University, 38 Zheda Road, Hangzhou 310027, China

^cDepartment of Mechanical Science and Engineering, University of Illinois, 1206 West Green Street, Urbana, Illinois 61801, USA

*Corresponding author: Ke Tang, Email: ktang@zju.edu.cn, Tel & Fax: +86-571-87953233

Abstract: Owing to the capability to induce a time-averaged pressure drop in oscillatory flow, a jet pump has been used to suppress the Gedeon streaming in a looped thermoacoustic engine. The suppression capacity originates from the asymmetric pressure drop through the jet pump, and could be enhanced by rounding the edge of the jet pump in traditional view. This paper systematically probes the rounding effect on a jet pump and compares the performance of jet pumps with round and with sharp edge on small opening. The performance dependences on the taper angle and the cross-sectional area ratios, including the big-to-small opening area ratio of the jet pump and the small opening-to-pipe cross sectional area ratio, are analyzed and compared for the two types of jet pump. The results reveal a reversed and higher time-averaged pressure drop in the sharp edge jet pump in contrast to that in the rounded jet pump. However, the round edge of the small opening can improve

Download English Version:

<https://daneshyari.com/en/article/7045184>

Download Persian Version:

<https://daneshyari.com/article/7045184>

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